



ATTACHMENT 4

Superfund Record of Decision:
Claremont Polychemical, NY
(EPA/ROD/R02-90/123)
September 1990

United States
Environmental Protection
Agency

Office of
Emergency and
Remedial Response

EPA/ROD/R02-90/123
September 1990



EPA Superfund Record of Decision:

Claremont Polychemical, NY

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15. Supplementary Notes			
16. Abstract (Limit: 200 words) <p>The 9.5-acre Claremont Polychemical site is an abandoned production facility in Oyster Bay, Nassau County, New York. Land use in the vicinity of the site is light industrial and commercial. From 1968 to 1980 when onsite operations ceased, Claremont Polychemical manufactured inks and pigments for plastics, coated metallic flakes, and vinyl stabilizers in several onsite buildings, which had asbestos insulation. The principal wastes generated were organic solvents, resins, and mineral spirits wash wastes. In 1979, the State identified improper storage practices onsite, including stockpiles of over 2,000 uncovered or leaking drums of wastes and an onsite spill area. Organic solvents from several onsite spills and discharge incidents may have contaminated onsite soil and ground water. By 1980, most of the onsite drums were sorted and removed offsite, reused, or burned onsite. Subsequently, contaminated soil was excavated and placed on a plastic sterile liner, which has degraded over time. Ground water investigations in 1980 revealed ground water contamination directly under the site. The remedial actions for this site have been divided into two Operable Units (OUs). This Record of Decision (ROD) focuses on OU2, overall remediation of ground</p> <p>(See Attached Page)</p>			
17. Document Analysis a. Descriptors Record of Decision - Claremont Polychemical, NY Second Remedial Action - Final Contaminated Media: soil, debris, gw Key Contaminants: VOCs (TCE, PCE, toluene, xylenes), other organics, metals (arsenic, chromium, lead), other inorganics (asbestos)			
b. Identifiers/Open-Ended Terms			
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Claremont Polychemical, NY
Second Remedial Action - Final

Abstract (continued)

water and soil/wastes contained onsite in drums and holding basins. The primary contaminants of concern affecting the soil, debris, and ground water are VOCs including PCE, TCE, toluene, and xylenes; other organics; metals including arsenic, chromium, and lead; and inorganics including asbestos.

The selected remedial action for this site includes excavation and onsite treatment of 1,600 cubic yards of contaminated soil using low temperature enhanced volatilization, followed by redeposition of the treated soil in the excavated areas; decontaminating the building, which includes removal, offsite disposal, and treatment of the asbestos insulation; excavating, treating, and disposing of the underground tanks, tank contents, associated equipment, liquid wastes, and contaminated soil offsite; backfilling the excavated area with clean soil; and pumping and treatment of ground water using air stripping, with carbon adsorption to control offgasses, followed by onsite reinjection of the treated ground water. The estimated present worth cost for this remedial action is \$16,800,00, which includes an annual O&M cost of \$1,100,400 for years 0-10 and \$701,900 for years 11-17.

PERFORMANCE STANDARDS OR GOALS: No chemical-specific cleanup levels were provided.

ROD FACT SHEET

SITE

Name: Claremont Polychemical
Location/State: Old Bethpage, Nassau County, New York
EPA Region: II
HRS Score (date): 31.62 (June 86)
NPL Rank (date): 915 (August 90)

ROD

Date Signed: September 28, 1990

Selected Remedy

Soils: Excavation and treatment via on-site low temperature enhance volatilization

Groundwater: Extraction and treatment via air stripping and carbon adsorption and reinjection of treated groundwater into the ground

Building: Decontamination via vacuuming, dusting and asbestos removal

Underground Tanks: Excavation, removal and off-site treatment/disposal of tanks and associated equipment

Capital Cost: \$ 6,200,000
O & M: \$ 1,100,400 (first ten years)
\$ 701,900 (next six years)
Present Worth: \$ 16,800,000

LEAD

Remedial, EPA
Primary Contact (phone): Carlos R. Ramos (212-264-5636)
Secondary Contact (phone): Douglas Garbarini (212-264-0109)

WASTE

Type: Soil - tetrachloroethene
Groundwater - trans-1,2-dichloroethene,
trichloroethene, 1,1,1-trichloroethane
Building - copper, zinc
Underground tanks - toluene, xylenes,
2-butanone

Medium:

Soil, groundwater, building, underground tanks

Origin:

Pollution originated during the operation of the Claremont Polychemical Corporation. The processes used resulted in the generation, storage and disposal of hazardous waste products.

DECLARATION FOR THE RECORD OF DECISION

Site Name and Location

Claremont Polychemical, Old Bethpage, Nassau County, New York

Statement of Basis and Purpose

This decision document presents the selected remedial action for the Claremont Polychemical site, in Old Bethpage, Nassau County, New York, developed in accordance with the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended by the Superfund Amendments and Reauthorization Act of 1986, and, to the extent practicable, the National Contingency Plan. The attached index (Appendix C) identifies the items that comprise the administrative record upon which the selection of the remedial action is based.

The State of New York has concurred with the selected remedy.

Assessment of the Site

Actual or threatened releases of hazardous substances from this site, if not addressed by implementing the response action selected in this Record of Decision, may present an imminent and substantial endangerment of public health, welfare, or the environment.

Description of the Selected Remedy

The remedy addresses the principal threat posed by the Site through a combination of source control alternatives including treatment of contaminated soils (SC-4), tank removal and treatment (T-2), active restoration of the groundwater (GW-3B), and building decontamination (BD-2).

This action complements the previous work conducted as part of the second operable unit developed to address wastes contained in several holding units (i.e., drums, aboveground tanks, basins, and a sump).

The major components of the selected remedy include:

- Excavation and on-site treatment of approximately 1,600 cubic yards of contaminated soils via low temperature enhanced volatilization and redeposition of treated soils into the excavated areas.

- Extraction and treatment of the contaminated groundwater at the Site via air stripping and carbon adsorption and reinjection of the treated water into the ground.
- Decontamination of the building via vacuuming and dusting of the contaminated surfaces and removing the asbestos insulation for off-site treatment and disposal.
- Excavation, removal and off-site treatment/disposal of the underground tanks, associated equipment, tank contents, and highly contaminated soil.

Declaration

The selected remedy is protective of human health and the environment, complies with Federal and State requirements that are legally applicable or relevant and appropriate to the remedial action, and is cost effective. This remedy utilizes permanent solutions and alternative treatment (or resource recovery) technologies to the maximum extent practicable and satisfies the statutory preference for remedies that employ treatment that reduces toxicity, mobility, or volume as a principal element.


Constantine Sidamon-Eristoff
Regional Administrator

7/28/00
Date

**DECISION SUMMARY
CLAREMONT POLYCHEMICAL SITE**

**OLD BETHPAGE
NASSAU COUNTY, NEW YORK**

**United States Environmental Protection Agency
Region II, New York**

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SITE NAME, LOCATION AND DESCRIPTION

The Claremont Polychemical site is an abandoned production facility located in central Long Island, in the community of Old Bethpage, Town of Oyster Bay, Nassau County, New York (see Figure 1). The facility is located in an area comprised of light industrial, commercial and institutional properties (Old Bethpage Landfill, SUNY Agricultural and Technical College at Farmingdale, and Bethpage State Park). The Suffolk County line is approximately 800 feet east of the Site.

In 1985, Old Bethpage had a population of 5,881 persons and Oyster Bay had a population of 305,750 persons, according to the Current Population Report (U.S. Bureau of Census, 1987). The closest residences are approximately half a mile away on the west side of the Old Bethpage Landfill ("Landfill"). The closest public supply well is located 3,500 feet northwest of the Site.

SITE HISTORY AND ENFORCEMENT ACTIVITIES

A chronological summary of activities associated with the Claremont Polychemical site is presented in Table 1. The Site occupies approximately 9.5 acres on which a 35,000 square foot, one story, concrete building is located (see Figure 2). Other features include: treatment basins, aboveground tanks, underground tanks, leaching basins, dry wells, and water supply wells.

From 1968 until its closure in 1980, Claremont Polychemical manufactured inks and pigments for plastics, coated metallic flakes, and vinyl stabilizers. The principal wastes generated were organic solvents, resins, and wash wastes (mineral spirits).

Concern for contamination was linked to a discovery in 1979 by the Nassau County Department of Health (NCDOH) of 2,000 to 3,000 drums scattered throughout the Site, some uncovered and others leaking. By September 1980 most of the drums were sorted and either removed from the Site or reused in the plant. Some of the material was burned in the plant's boiler. NCDOH inspectors noted at the time that an area east of the building (spill area) was contaminated with organic solvents as a result of accidental and/or incidental spills and discharges. A subsequent removal action by the property owners, in 1980, excavated the upper ten feet of a seventy-five foot by seventy-five foot area. The excavated material was placed on a plastic liner. Over the years, this liner has degraded and no longer is an impermeable layer. Groundwater samples from a monitoring well installed at the time (1980) indicated the presence of groundwater contamination directly under the Site.

Claremont Polychemical and its affiliated companies (Winding Road Estates and Winding Road Properties) entered into receivership in

1980. In 1983, Woodward-Clyde Consultants, under the direction of the New York State Department of Environmental Conservation, conducted a preliminary investigation of the Site. In 1984, Velzy Associates conducted a limited study of the Site for the property owners. Additional sampling was performed and a report was written by C.A. Rich Consultants in response to questions by the U.S. Bankruptcy Court. For the last four to five years two tenant businesses have been operating at the Site.

The Claremont Polychemical site was first proposed for inclusion on the National Priorities List (NPL) in October 1984 and was listed in June 1986. On December 4, 1987, EPA issued a special notice letter to Mr. Walter Neitlich (Claremont Polychemical Officer) requesting a good faith offer to undertake or finance the remedial investigation and feasibility study. No response was received from Mr. Neitlich or a company representative, so in March 1988 EPA obligated funds and started a comprehensive Remedial Investigation and Feasibility Study ("RI/FS") for the first operable unit.

A preliminary evaluation by EPA in July 1988 revealed the presence of hazardous waste held in containers (e.g. drums) and other holding units (treatment basins, aboveground tanks, and a sump). In September 1988, EPA performed work consisting of the overpacking and/or stabilization of deteriorated containers and holding units. A second operable unit RI/FS (OU-II) dealing with the ultimate disposal of the above mentioned hazardous wastes was completed by EPA in July 1989. The Record of Decision for OU-II was issued in September 1989. The selected remedy is currently being implemented and consists of compatibility testing, bulking/consolidation, and treatment/disposal of the wastes at off-site, EPA-approved, treatment facilities.

HIGHLIGHTS OF COMMUNITY PARTICIPATION

The RI/FS Reports, and the Proposed Plan for remedial action were released for public comment on August 24, 1990. These documents were available to the public in both the administrative record file and the information repository maintained at the EPA docket room in Region 2 and at the Plainview-Old Bethpage Public Library. A press release announcing the availability of these documents was issued on August 4, 1990. The public comment period set by EPA concluded on September 25, 1990.

During the public comment period EPA held a public meeting to present the RI/FS Report and the Proposed Plan, answer questions, and accept both oral and written comments. The public meeting was held in the auditorium of the Old Bethpage Village Restoration, Old Bethpage, New York on September 5, 1990. Comments received by EPA are addressed in the Responsiveness Summary (Appendix E) appended to the Record of Decision. This decision document presents the selected remedial action for the Claremont

Polychemical site, in Old Bethpage, New York, chosen in accordance with CERCLA, as amended by SARA and to the extent practicable, the National Contingency Plan ("NCP"). The decision for this site is based in the administrative record.

SCOPE AND ROLE OF OPERABLE UNIT

EPA divided the remedial work being conducted at the Claremont Polychemical site into two operable units. The first operable unit addresses the overall site remediation (groundwater and soil) and is the focus of this document. The RI/FS for the first operable unit contains the detailed information and data used in determining the nature and extent of the problem and the development of remedial alternatives to address the problem.

The second operable unit deals only with the wastes held in containers and holding units. In September 1989, EPA decided to remove these wastes and treat/dispose of the materials off-site. This action, which includes the containers found inside the building (e.g. drums) and the wastes contained inside the holding units (e.g. treatment basins, aboveground tanks), is currently ongoing.

The overall objective of the remediation is to reduce the concentrations of contaminants in various media and structures at the Site to levels which are protective of human health and the environment. The remedy selected should eliminate long-term sources of contamination of groundwater and other media, and will achieve this objective through:

- o Soil Treatment. On-site treatment of the soil to remove the mobile organic contamination will result in the elimination of a long-term source of contamination of the groundwater.
- o Groundwater Treatment. Extraction and treatment of the contaminated groundwater will contain the migration of the plume and, in time, will achieve federal and state standards for the volatile organic contaminants.
- o Building Decontamination. Removal of all hazardous materials from the building will eliminate any potential risk to human health and the environment.
- o Removal and Treatment of Underground Tanks, Liquid Wastes, and Associated Soils. Removal and off-site treatment of these wastes will result in the elimination of the threat to human health and the environment from possible contact with the wastes. It also will result in the eradication of a potential long-term source of groundwater contamination.

SUMMARY OF SITE CHARACTERISTICS

SOILS

Soil samples for chemical characterization collected at the Claremont Polychemical site consisted of two types: surface soils and subsurface soils. Surface soil samples were obtained from the upper six inches of soil whereas subsurface soil samples were obtained from two foot intervals at various depths below grade up to a depth of 82 feet beneath the Site.

Surface Soil

Surface soil samples collected on-site were analyzed for metals. Soil sample results were compared with typical background levels and are summarized in Table 2. Of the metals detected, only cadmium (33.1 ppm), copper (230 ppm), lead (327 ppm), magnesium (29,200 ppm), and zinc (3,200 ppm) exceeded typical eastern U.S. soil background levels at a few of the surface soil sampling locations, primarily in the soils adjacent to the treatment basins (see Figure 3). These metals are most probably found in surface soil due to overflow from the treatment basins and current site use (i.e., vehicular traffic, storage of construction debris).

Subsurface Soil

Volatile organic compounds detected in the subsurface soil samples included tetrachloroethene (26,000 ppb), 1,2-dichloroethene (71 ppb), trichloroethene (17 ppb), acetone (14,000 ppb), toluene (82 ppb), 2-butanone (3,300 ppb), xylenes (150 ppb) and 4-methyl-2-pentanone (360 ppb). In general, total volatile organic concentrations were greatest to the east of the process building in proximity to the former spill area at boring locations SB-19 and SB-21 which are shown in Figure 4. Overall, the volatile organic concentrations decrease rapidly with depth. A summary of the results is presented in Table 3.

Several base/neutral acid extractable organic compounds (BNA) were detected within soil boring samples, a majority of which were polynuclear aromatic hydrocarbons (PAH's) that are constituents of fuel, oil and grease. In addition, phthalates (270,000 ppb), benzoic acid (120 ppb), 2-chloronaphthalene (33,000 ppb) and pentachlorophenol (360 ppb) also were found in some samples. The greatest concentrations of the three most prevalent phthalates; bis(2-ethylhexyl)phthalate (BEHP) at 70,000 ug/kg, di-n-butylphthalate at 3,900 ug/kg and butylbenzylphthalate at 8,200 ug/kg were found at 0-2 ft at SB-19 in the spill area.

Relatively low levels of five pesticides, i.e., dieldrin (26 ppb), heptachlor (18 ppb), DDT (88 ppb), DDD (180 ppb), and DDE

(110 ppb) were detected, predominantly in the western and northern portions of the Site. PCBs were detected only at soil boring locations SB-02, 08, and 25 with a maximum concentration of 1,100 ppb. Surficial oil spillage in these areas appears to be the most likely source of these PCBs since elevated PNAs, typically associated with oil, were also present at these locations.

Metals detected in soil boring samples which exceeded typical eastern U.S. soil background levels included arsenic (35 ppm), cadmium (14.1 ppm), copper (152 ppm), lead (90.8 ppm), magnesium (29,100), and selenium (2.0 ppm). Selenium, lead and magnesium exceeded background at several locations, generally at the 0-4 feet depth, but with no apparent spatial distribution. The elevated levels of these metals could be associated with the presence of fill material, vehicular emissions and surficial spills of fuel-related products.

Volume of Contaminated Soil

Tetrachloroethene (PCE) is identified as the only chemical of concern in soil due to the leaching of PCE from the soil to the underlying groundwater. The estimated volume of contaminated soil that requires remediation is based on the extent of PCE contamination in the soil. Soil-to-groundwater models have indicated the potential for PCE to contaminate the aquifer above potable water standards. In order to minimize the impact of the PCE on the groundwater and enhance the groundwater treatment remedy, the first two feet of soil in the spill area will be treated. Treatment to a depth of two feet will remove the significant contamination from the soil, including the location where the highest level of contamination, 26 ppm of PCE, was found. Based on soil boring information collected from the Site, this will reduce the average PCE contamination in the soil to much less than 200 ppb. A 21,000 ft² area of soil, generally located in the spill area, as shown in Figure 5, is identified as requiring remediation. The preliminary volume of contaminated soil from this area which requires remediation is estimated to be 1,600 cubic yards.

GROUNDWATER

Two rounds of groundwater sampling were conducted, the first was conducted in April 1989 and the second in June 1989. The wells were distributed upgradient, in the immediate vicinity, and downgradient of the Site in order to define the nature and extent of contamination originating at the Site. In addition, three wells were located to the west of the Site to define the contaminant plume emanating from the Old Bethpage Landfill. Figure 6 shows the location of these wells and the approximate extent of the contaminated groundwater plume. The groundwater flow in the region was generally from the north-northwest to the

south-southeast.

Groundwater samples were analyzed for volatile organics, semi-volatile organics, pesticides and PCBs, inorganics and several standard water quality parameters. A summary of the results is presented in Table 4.

Results

Tetrachloroethene had the greatest spatial extent and highest groundwater concentrations of any contaminant found in site groundwater. Figure 7 shows the maximum groundwater concentrations for tetrachloroethene in all wells analyzed for during this investigation. The maximum detected concentration occurs near the property's boundary and the concentration gradually attenuates to the southeast. Maximum detected levels of tetrachloroethene (1,300 ppb), trans-1,2-dichloroethene (830 ppb), trichloroethene (260 ppb), 1,1,1-trichloroethane (100 ppb), ethylbenzene (160 ppb), acetone (540 ppb), benzene (60 ppb), 1,1-dichloroethane (17 ppb), methylene chloride (14 ppb), total xylenes (40 ppb) and vinyl chloride (7 ppb) were found which exceeded federal and/or New York State Maximum Contaminant Levels ("MCLs"). Maximum detected values were generally found in the shallow portion of the aquifer (0-45 ft).

The frequency and levels of semivolatiles and pesticides detected were much lower than those generally found for volatile organics. The highest concentration found was 92 ug/l for bis(2-ethylhexyl)phthalate (BEHP) however, this level was comparable to that found (88 ug/l) in an upgradient well. No PCBs were found.

Several metals were detected in concentrations exceeding federal and state standards including arsenic (56.5 ppm), chromium (159 ppm), lead (464 ppm) and manganese (3,130 ppm). However, of these metals chromium and lead also occurred above MCLs in upgradient wells.

AIR

The ambient air samples collected show low concentrations of volatile contaminants namely chloroform (0.07 ppb), 1,1,1-trichloroethane (0.7 ppb), carbon tetrachloride (0.12 ppb), trichloroethene (1.14 ppb), tetrachloroethene (3.42 ppb), toluene (2.1 ppb), and styrene (0.37 ppb). However, these concentrations were generally comparable, and in several cases lower, than upwind concentrations (i.e., chloroform, carbon tetrachloride, 1,1,1 trichloroethane, toluene and styrene). Table 5 presents a summary of the analytical results.

UNDERGROUND STORAGE TANKS

An underground tank farm consisting of fourteen tanks was

uncovered and sampled. Of the fourteen tanks, ten were made of steel and four were made of fiberglass. Eleven contained sufficient materials to obtain liquid and/or sludge samples. The amount of material contained in the tanks (approximately 16,000 gallons) varied from a few inches to several feet deep. Samples were analyzed for one or more of the following parameters: TCL volatiles, semivolatiles, inorganics and pesticide/PCB compounds, total recoverable petroleum hydrocarbons (TRPH), corrosivity, flash point, reactive cyanide and reactive sulfide.

In general, results show that the number of organic compounds detected in any given sample was usually less than three compounds with a maximum of eight compounds. The maximum number of water immiscible organic compounds was found in the eastern steel tank EST-04. The contents in three of the tanks were dominated by: 2-butanone (92%) in western steel tank WST-03; toluene (2.6%) and xylenes (3.6%) in the water immiscible phase in eastern steel tank EST-04; and bis(2-ethylhexyl)phthalate (BEHP) (23%) in eastern steel tank EST-06. No pesticides or PCBs were detected in any tank investigation samples analyzed for these compounds.

For most of the tanks, the TRPH was less than 40 mg/l. However, for western steel tank WST-03 and eastern steel tank EST-06, the levels were 1.4% (14,000 mg/l) and 14.5% (145,000 mg/l), respectively. These tanks contain high levels of 2-butanone and BEHP, respectively. Most of the corrosivity results fall in the range of 3 to 5.8 mm/yr. The flash points of most of the tank fluids fell above 100°C. Western steel tank WST-03 and eastern steel tank EST-04 contained fluids having flash points below 15°C. Fiberglass tank FG-04 contains fluid with a flash point of 30°C.

Four organic compounds were found in the soil directly next to the tanks, however, three of them, tetrachloroethene, chloroform and di-n-butylphthalate, occurred at trace levels (less than 26 ppb). The fourth compound, bis(2-ethylhexyl) phthalate (BEHP), occurred at substantially higher levels, in the range of 50 to 3,000,000 ppb (i.e. up to 0.3%), in all samples.

BUILDING

Within the Claremont process building, samples were collected to characterize any contamination associated with accumulated dust, standing water (in floor drains and previously operating condensers), and insulation materials. Results are summarized in Table 6.

Building Dust Wipes

Analysis of wipe samples taken from floors and walls show the widespread presence of metals within the building. Inorganics

were detected at consistently high concentrations - aluminum at 1,696 ug/ft² to 45,013 ug/ft² and copper from 142 ug/ft² to 2,091 ug/ft². BNA and pesticide analysis showed bis(2-ethyhexyl)phthalate as the principal contaminant at concentrations of 107 to 3,200 ug/ft².

Condensers and Floor Drains

Water samples were collected from two condensers and two floor drains within the building. A wipe sample was also taken from one condenser. All samples showed elevated levels of inorganics. Principal contaminants include copper (17.9 - 43,900 ug/l) and zinc (up to 12,200 ug/l in water samples, and 77,653 ug/ft² in the condenser).

Pipes

Analyses of 17 samples of insulating material collected from the pipes within the building showed that 14 out of 17 samples had greater than 5% asbestos. Asbestos concentrations in the building materials analyzed ranged from non detect to 25% asbestos.

SUMMARY OF SITE RISKS

EPA conducted an Endangerment Assessment (EA) of the "no action" alternative to evaluate the potential risks to human health and the environment associated with the Claremont Polychemical site in its current state. The EA focused on the contaminants in the air, building dust, soil, and ground water which are likely to pose the most significant risks to human health and the environment (indicator chemicals). The summary of "indicator chemicals" in sampled matrices is listed in Table 7.

EPA's EA identified several potential exposure pathways by which the public may be exposed to contaminant releases at the Site. Potential pathways were developed based on current (residential, industrial) and future land use (residential, industrial) scenarios at the Site. Several pathways (direct contact, inhalation and ingestion) were evaluated for each scenario. Under the present land use, ingestion of ground water, inhalation of fugitive dust, and contaminated air were considered complete exposure pathways. Ground water downgradient of the Site was used for present and future off-site land use exposure scenarios, whereas site ground water was used for on-site future land use scenario. Site air and soil concentrations, were used for both scenarios, as applicable. These pathways and the populations potentially affected are shown in Table 8. Potentially exposed populations include on-site and off-site residents, farm workers, and construction workers. Two risks were calculated, corresponding to the average and maximum plausible case.

Under current EPA guidelines, the likelihood of carcinogenic (cancer causing) and non-carcinogenic effects due to exposure to site chemicals are considered separately. It was assumed that the toxic effects of the site related chemicals would be additive. Thus, carcinogenic and non-carcinogenic risks associated with exposures to individual indicator compounds were summed to indicate the potential risks associated with mixtures of potential carcinogens and non-carcinogens, respectively.

Non-carcinogenic risks were assessed using a hazard index (HI) approach, based on a comparison of expected contaminant intakes and safe levels of intake (Reference Doses). Reference doses (RfDs) have been developed by EPA for indicating the potential for adverse health effects. RfDs, which are expressed in units of mg/kg-day, are estimates of daily exposure levels for humans which are thought to be safe over a lifetime (including sensitive individuals). Estimated intakes of chemicals from environmental media (e.g., the amount of a chemical ingested from contaminated drinking water) are compared with the RfD to derive the hazard quotient for the contaminant in the particular media. The hazard index is obtained by adding the hazard quotients for all compounds across all media. A hazard index greater than 1 indicates that potential exists for non-carcinogenic health effects to occur as a result of site-related exposures. The HI provides a useful reference point for gauging the potential significance of multiple contaminant exposures within a single medium or across media. The reference doses for the indicator chemicals at the Claremont Polychemical site are presented in Table 9.

The hazard indices for non-carcinogenic effects from the Site are listed in Table 10. All total HIs listed under current and future off-site and on-site land uses are greater than 1, suggesting that non-cancer effects may occur.

Potential carcinogenic risks were evaluated using the cancer potency factors developed by the EPA for the indicator compounds. Cancer potency factors (CPF) have been developed by EPA's Carcinogenic Risk Assessment Verification Endeavor for estimating excess lifetime cancer risks associated with exposure to potentially carcinogenic chemicals. CPFs, which are expressed in units of (mg/kg-day)⁻¹, are multiplied by the estimated intake of a potential carcinogen, in mg/kg-day, to generate an upper-bound estimate of the excess lifetime cancer risk associated with exposure to the compound at that intake level. The term "upper bound" reflects the conservative estimate of the risks calculated from the CPF. Use of this approach makes the underestimation of the risk highly unlikely. The CPFs for the indicator chemicals are presented in Table 11.

For known or suspected carcinogens, the USEPA considers excess upper bound individual lifetime cancer risks of between 10^{-4} to

10^4 to be acceptable. This level indicates that an individual has not greater than a one in ten thousand to one in a million chance of developing cancer as a result of exposure to site conditions.

The potential risks due to carcinogens at the Site are listed in Table 12. The estimated risk for the current use of the recreational areas located downgradient of the Site ranged between 1.88×10^4 and 1.4×10^5 . Under future off-site land use conditions, inhalation of the site air and ingestion of unfiltered downgradient ground water posed a total risk varying between 1.2×10^4 and 5.0×10^5 . Higher risks were estimated for future on-site land use. The risks from all pathways range from 1.84×10^4 to 6.61×10^4 . The primary risk to workers was due to inhalation of resuspended dust inside the building (2.37×10^4 to 5.09×10^5). The risk for inhalation of building resuspended dust is above the risk range for carcinogens at the Site and the remaining risks fall within EPA's acceptable risk range.

Uncertainties

The procedures and inputs used to assess risks in this evaluation, as in all such assessments, are subject to a wide variety of uncertainties. In general, the main sources of uncertainty include:

- environmental chemistry sampling and analysis
- environmental parameter measurement
- fate and transport modeling
- exposure parameter estimation
- toxicological data

Uncertainty in environmental sampling arises in part from the potentially uneven distribution of chemicals in the media sampled. Consequently, there is significant uncertainty as to the actual levels present. Dermal adsorption and ingestion of soil were not included in the exposure pathways for future off-site land use because of the lack of off-site soil data. Environmental chemistry analysis error can stem from several sources including the errors inherent in the analytical methods and characteristics of the matrix being sampled.

Uncertainties in the exposure assessment are related to estimates of how often an individual would actually come in contact with the chemicals of concern, the period of time over which such exposure would occur, and in the models used to estimate the concentrations of the chemicals of concern at the point of exposure.

Uncertainties in toxicological data occur in extrapolating both from animals to humans and from high to low doses of exposure, as

well as from the difficulties in assessing the toxicity of a mixture of chemicals. These uncertainties are addressed by making conservative assumptions concerning risk and exposure parameters throughout the assessment. As a result, the EA provides upper bound estimates of the risks to populations near the Landfill, and is highly unlikely to underestimate actual risks related to the Site.

More specific information concerning public health risks, including quantitative evaluation of the degree of risk associated with various exposure pathways is presented in the RI Report.

Actual or threatened releases of hazardous substances from this site, if not addressed by implementing the response action selected in this ROD, may present an imminent and substantial endangerment to public health, welfare, or the environment.

DESCRIPTION OF ALTERNATIVES

Following a screening of remedial technologies in accordance with the NCP, ten remedial alternatives were developed for contaminated groundwater; five remedial alternatives were developed for treatment of soil; and two alternatives were developed to remediate the building and underground tank areas, respectively.

These alternatives were screened based on implementability, effectiveness, and cost. The screening resulted in remedial alternatives upon which a detailed analysis was performed. The remedial alternatives not retained for a detailed evaluation were: capping (SC-2); and, groundwater alternatives which relayed solely on carbon adsorption (GW-4A and 4B) and carbon adsorption/enhanced activated sludge treatment (GW-6A and 6B).

Those alternatives considered in detail are discussed below. The time to implement as used herein means the time required for site preparation and for actual on-site construction, start-up activities and cleanup except for groundwater alternatives which do not include actual remediation time. It includes the remedial design phase which typically takes 2-3 years to complete and starts from the signing of the ROD. The remedial alternatives are organized according to the media or specific structures which they address: soil (SC), groundwater (GW), building (BD) and underground tanks (T).

SOILS**Alternative SC-1: No Further Action**

Capital Cost: none
O & M Cost: \$34,900 per year
Present Worth Cost: \$564,300
Time to Implement: 1 month

The No Action alternative provides the baseline case for comparison with other soil alternatives. Under this alternative, the contaminated soil is left in place without treatment. A long-term groundwater monitoring program would be implemented to track the migration of contaminants from the soil into the groundwater. Existing monitoring wells would be used for monitoring. Five year reviews would be performed to assess the need for further actions.

Roll-off containers and drums containing soils and drilling mud generated during the remedial investigation would have to be transported off-site for treatment and disposal in accordance with state and federal regulations.

Alternative SC-3: Excavation/Off-Site Incineration/Backfill with Clean Soil

Capital Cost: \$5,000,000
O & M Cost: none
Present Worth Cost: \$5,000,000
Time to Implement: 3.5 years

Site preparation for the remedial implementation would include a parking area, equipment staging area and stockpile area. Support facilities (e.g. offices) also would be installed on the site. An estimated total of 1,600 cubic yards (cy) of soil would be excavated. Excavation would be conducted under moistened conditions by spraying water over the surface to minimize fugitive dust and volatile contaminant emissions. The soil would be stockpiled prior to transportation to an off-site facility. The excavated soil would be transported to an off-site, EPA-permitted incineration facility for treatment and disposal. The roll-off containers and drums containing soil from the remedial investigation also would be re-packed into the same type of containers and transported for off-site incineration along with the excavated soil. Clean soil would be used to backfill the excavated area. Site restoration would include the application of topsoil and seeding.

Alternative SC-4: Excavation/On-Site Low Temperature Enhanced Volatilization/On-Site Redeposition

Capital Cost: \$700,000

O & M Cost: none

Present Worth Cost: \$700,000

Time to Implement: 3.5 years

Site preparation and soil excavation would be performed as in Alternative SC-3. An estimated 1,600 cy of contaminated soil would be treated in a mobile enhanced volatilization (low temperature thermal extraction) unit brought on site. Low temperature thermal extraction consists of a feed system, thermal processor, afterburner, and scrubber. The excavated contaminated soil is placed in the feed hopper with a backhoe. The soil is then conveyed from the hopper to the thermal processor. Hot air from an air heater is injected into the thermal processors at a normal operating temperature of 260°C (500°F) which is well above the boiling points of most volatile organic compounds (VOCs). The volatilized compounds and moisture in the contaminated soil is then burned at 1,090°C (2,000°F) in an afterburner operated to ensure complete destruction. A portion of the off-gas is recirculated as combustion air to minimize fuel usage. The off-gas is then treated at the scrubber for particulate removal and acid gas adsorption. The off-gas leaves the system at a temperature of less than 93°C (200°F).

The volatilized contaminant-laden gas also can be treated by an activated carbon adsorption unit instead of an afterburner for PCE removal. A bag filter would be used to remove particulates from the gas before it enters the carbon adsorption unit. The treated soil would be free of volatile organics and would be stored for sampling and then used as backfill in the excavated areas. Site restoration would be performed as in Alternative SC-3. The roll-off containers and drums containing RI soil also would be treated with the excavated soil.

Alternative SC-5: In-Situ Vacuum Extraction

Capital Cost: \$385,600

O & M Cost: none

Present Worth Cost: \$385,600

Time to Implement: 4 years

Site preparation would be performed as in Alternative SC-3. However, the soil is left in place undisturbed, therefore no excavation would be required. This alternative involves the installation of vacuum extraction wells over the contaminated soils. Each well would have a maximum depth of 10 feet. The vacuum wells would be connected via a pipe system to a skid-mounted high volume vacuum pump. The vacuum would pull air

through the contaminated soils, within a radius of approximately 20 feet from the wells, depending on soil composition and volatility of the contaminant. The air containing the stripped VOCs from the soil would be fed through a condenser to recover the free product and moisture, and then through an emissions control system, i.e., a vapor phase carbon adsorption system. The condensed product would be drummed and transported to an off-site treatment and disposal facility (most likely an incinerator). The roll-offs and drums containing soil would also be treated on-site via this technology by using a one-pipe system within the drum connected to a vacuum pump. The treated soils would be used on-site for backfilling and regrading.

GROUNDWATER

Alternative GW-1: No Further Action

Capital Cost: none
O & M Cost: \$28,400
Present Worth Cost: \$464,400
Time to Implement: 1 year

This alternative includes the use of existing wells to conduct a long-term groundwater sampling program which would monitor the migration of contaminants of concern in the aquifer. A total of ten wells, including existing upgradient, on-site and downgradient wells, would be utilized in order to sample the groundwater from the shallow to deeper portions of the aquifer and to track contaminant migration off-site. Regular five-year reviews would be performed to assess the need for additional remedial actions. Under this alternative, it would take 100 years to achieve groundwater remediation.

Alternative GW-2: Pumping/Pretreatment/Air Stripping/Carbon Adsorption/Reinjection; Pumping at the Site Boundary (0.2 mgd)

Capital Cost: \$214,800
O & M Cost: \$378,700
Present Worth Cost: \$3,350,500
Time to Implement: 3 years

This alternative includes the installation of three extraction wells downgradient of the Site in order to extract 0.2 million gallons per day (mgd) of groundwater from the site contaminant plume. This groundwater would be piped to the Old Bethpage Landfill groundwater treatment system for treatment and disposal. The Landfill groundwater treatment system is currently under construction and scheduled to be completed in 1991. The 0.2 mgd is the maximum allowable input from the Claremont site to the Landfill pump and treatment system due to design limitations of the Landfill system. The treated effluent would be reinjected into the aquifer through a recharge basin being constructed as

basin being constructed as part of the Landfill system. This flow rate is below the modeled maximum pumping rate of 1.9 mgd estimated for removal and treatment of the Claremont contaminant plume. (The original estimate of the volume of contaminated groundwater to be treated was much less than the current estimate.) In addition, the landfill treatment system is only planned to operate for 10 years based upon the time estimated for remediation to be completed for the Old Bethpage plume. Long-term monitoring using the new extraction wells and existing wells would be performed for 30 years in order to monitor any continued migration of remaining contamination in the groundwater, both during and after the operation of the landfill treatment system.

Alternative GW-3A: Pumping/Pretreatment/Air Stripping/Carbon Adsorption/Reinjection; Pumping at the Leading Edge of the Plume (1.9 mgd)

Capital Cost: \$4,044,700
 O & M Cost: \$1,622,900
 Present Worth Cost: \$28,978,000
 Time to Implement: 3 years

In this alternative, three extraction wells would be installed downgradient of the site on the Bethpage State Park property in order to capture the entire site contaminant plume. Approximately 1.9 mgd would be pumped to an on-site treatment facility. The treated groundwater would be pumped to a discharge system for reinjection to the aquifer via three reinjection wells. The siting of the extraction wells would be completed during the design phase based on technical criteria.

The groundwater treatment facility would consist of two major processes: pretreatment to remove metals (iron, manganese, arsenic, and thallium) and air strippers followed by a carbon adsorption system to remove volatile and semivolatile organics. The pretreatment system would be designed to effectively reduce the metal concentrations in the groundwater below the federal and New York State Groundwater Standards. This pretreatment system would consist of a metals precipitation system and dual media pressure filter. The resulting sludge would require off-site treatment and disposal.

Two air strippers in series followed by liquid phase carbon adsorption would be used to lower the levels of organic contamination below the state groundwater standards. Approximately 95 to 99 percent of the volatile organics would be removed by air stripping. The stripped groundwater would be pumped to a two-stage liquid phase carbon adsorber for removal of the remaining volatiles and BEHP, and phenol. The volatile organic emissions from the air stripping would be adsorbed on a vapor phase activated carbon system in order to meet air quality

standards. Spent carbon would be removed for off-site regeneration or incineration, thus destroying all organic contaminants. Two treatment trains (parallel systems for treating the groundwater) rated at 660 gallons per minute (gpm) each would be required.

Environmental monitoring would be required during the life of the treatment plant operation (i.e., 30 years). Air emissions would be monitored to confirm compliance with the air discharge limit. Groundwater samples would be taken every six months to monitor groundwater contamination migration and the effectiveness of remediation. Under this alternative it is estimated to take 62 years to achieve remediation of the groundwater plume.

Alternative GW-3B: Pumping/Pretreatment/Air Stripping/Carbon Adsorption/Reinjection; Pumping at the Site Boundary and Downgradient (1.0 mgd)

Capital Cost: \$4,936,000

O & M Cost: \$1,100,400 (first ten years)

\$701,900 (next six years)

Present Worth Cost: \$15,620,400

Time to Implement: 3 years

In this Alternative, two extraction wells would be installed at the boundary of the Site to capture the most contaminated groundwater. Additional extraction wells would be located downgradient from the Site to capture the off-site migrating plume. Sufficient information exists at this time to locate the on-site wells which would pump the concentrated contaminant plume for treatment, however additional information would be required before the downgradient extraction wells could be sited. These information needs include information regarding the actual extent of the downgradient plume, as well as potential impacts the Old Bethpage Landfill may have on this plume once it begins operation. Additional sampling would be conducted to obtain this information. For these reasons it is likely that the on-site extraction wells would be installed (0-2 years) prior to the off-site and downgradient wells.

During the first phase extraction wells would be installed at the site boundary, requiring two treatment trains each rated at 250 gpd to treat the concentrated groundwater plume. During the second phase the downgradient groundwater plume would be extracted, requiring the installation of two additional treatment trains also rated at 250 gpd. The treatment trains would be located on-site and operated in parallel. The extracted groundwater would be treated as in Alternative 3A. The on-site and off-site extraction wells would treat 1 mgd for approximately 10 years. After 10 years it is anticipated that the downgradient

plume would be significantly treated. Thereafter, on-site extraction and treatment of 0.5 mgd would continue for approximately six additional years.

Implementing this remedy in two phases would provide increased overall efficiency and flexibility. This optimized extraction and treatment system design would be better able to address the remediation of the Claremont site plume.

Alternative GW-5A: Pumping/Pretreatment/UV-Chemical Oxidation/Reinjection; Pumping at the Leading Edge of the Plume (1.9 mgd)

Capital Cost: \$4,088,900
O & M Cost: \$1,108,000
Present Worth Cost: \$21,121,100
Time to Implement: 3 years

This remedial alternative is similar to Alternative GW-3A except that a chemical oxidation process rather than air stripping/adsorption process would be used to remove the volatile and semivolatile organics in the groundwater. An ultraviolet light-hydrogen peroxide oxidation system is selected as the representative process to treat the contaminated groundwater. This oxidation system would employ a combination of hydrogen peroxide (H_2O_2) and ultraviolet (UV) light to chemically oxidize the organic contaminants in the groundwater to carbon dioxide, water and chlorides. Multiple units would be required. The treated groundwater would have organic concentrations below state and federal standards. The time necessary to achieve remediation would be 62 years.

Alternative GW-5B: Pumping/Pretreatment/UV-Chemical Oxidation/Reinjection; Pumping at the Site Boundary and Downgradient (1.0 mgd)

Capital Cost: \$4,069,800
O & M Cost: \$1,008,600 (first ten years)
\$656,000 (next six years)
Present Worth Cost: \$13,902,300
Time to Implement: 3 years

Groundwater extraction, pretreatment, and reinjection would be accomplished as in Alternative GW-3B. The UV- H_2O_2 system would operate as in Alternative GW-5A except that smaller treatment units would be used. The time necessary to achieve groundwater remediation would be 16 years.

BUILDING**Alternative BD-1: No Further Action**

Capital Cost: \$8,800
O & M Cost: \$2,100 per year
Present Worth Cost: \$41,100
Time to Implement: 1 month

The No Action alternative provides the baseline against which other alternatives can be compared. It would result in leaving the contaminated dust, asbestos insulation, and contaminated water in floor drains and condensers intact in the building. The only additional security measure implemented to completely seal the building would be waterproofing of the building ceiling. A long-term maintenance program, including site inspections, would be implemented in order to ensure that the building is completely sealed and is not accessible to the public in the future.

Alternative BD-2: Building Decontamination

Capital Cost: \$186,200
O & M Cost: none
Present Worth Cost: \$186,200
Time to Implement: 6 months

The inside contaminated surfaces of the building (i.e., walls, floors, and hoods) would be decontaminated using dusting, vacuuming and wiping procedures. In addition three dust collectors on the roof would be emptied. The collected dust would be transported to an off-site EPA-permitted treatment and disposal facility. The contaminated water in the floor drains and condensers also would be removed and disposed of off-site.

UNDERGROUND STORAGE TANKS**Alternative T-1: No Further Action**

Capital Cost: \$2,600
O & M Cost: \$2,200 per year
Present Worth Cost: \$64,300
Time to Implement: 1 month

Under this alternative the underground tanks and contents would be left in place. The large amounts of hazardous materials contained in the tanks would continue to constitute a potential source of soil and groundwater contamination. A monitoring program using the existing monitoring wells would be established to detect the movement of these compounds into the groundwater.

Alternative T-2: Removal and Off-Site Treatment/Disposal

Capital Cost: \$336,300

O & M Cost: none

Present Worth Cost: \$336,300

Time to Implement: 6 months

This alternative entails excavation of overburden soils, pumping of tank contents, tank cleaning, removal of tanks and associated equipment, off-site disposal/treatment of tanks, equipment and liquid waste, and backfilling with clean soil. A portion of the wastes (tank content) could be reused if practical.

The underground tanks and associated piping would be drained and cleaned of any residual sludge. Tanks would be hoisted and subsequently loaded on trucks and hauled off-site for disposal. Other components of the tank farm, such as pumps, concrete pads, and the pumphouse, would be demolished and transported off-site for disposal. At the disposal facility, the steel tanks would be retested for hazardous waste contents. Nonhazardous tanks would either be sold for scrap or landfilled, depending on the extent to which they could be decontaminated. Hazardous tanks and tank contents would be disposed of at an off-site EPA-approved hazardous waste treatment and disposal facility.

Contaminated soils discovered during tank excavation would be stockpiled in roll-off containers and subsequently transported to an off-site EPA-permitted treatment and disposal facility. Alternately, the contaminated soils could be treated on-site using the low temperature thermal treatment unit. After treatment, the soils would no longer be deemed to contain listed RCRA hazardous constituents because the soils would be treated to below health-based levels and would be treated in accordance with the treatment standards required by RCRA Land Disposal Restrictions (LDRs). Because the soils would no longer contain any listed RCRA hazardous constituents above health-based levels, they would not be subject to regulation under Subtitle C of RCRA and may be used to backfill the excavated areas on-site.

Sampling of the soils underlying the tank farm would be conducted as part of this alternative to further delineate the nature and extent of soil contamination within this area and to assess effectiveness of the remedy.

A description of the remedial alternatives retained and evaluated in detail is provided below.

SUMMARY OF COMPARATIVE ANALYSIS OF ALTERNATIVES

EPA has developed nine criteria in "The Feasibility Study: Detailed Analysis of Remedial Action Alternatives" (OSWER Directive 9355.3-01) to evaluate potential alternatives to ensure

all important considerations are factored into remedy selection decisions. The major objective of this section is to evaluate the relative performance of the alternatives with respect to the criteria so that the advantages and disadvantages associated with each cleanup option are clearly understood.

The evaluation criteria are noted and explained below.

- o Overall protection of human health and the environment addresses whether or not a remedy provides adequate protection and describes how risks posed through each exposure pathway (based on a reasonable maximum exposure scenario) are eliminated, reduced, or controlled through treatment, engineering controls, or institutional controls.
- o Compliance with applicable or relevant and appropriate requirements (ARAR's) addresses whether or not a remedy would meet all of the applicable or relevant and appropriate requirements of other federal and state environmental statutes and requirements or provide grounds for invoking a waiver.
- o Long-term effectiveness and permanence refers to the ability of a remedy to maintain reliable protection of human health and the environment over time, once cleanup goals have been met. It also addresses the magnitude and effectiveness of the measures that may be required to manage the risk posed by treatment residuals and/or untreated wastes.
- o Reduction of toxicity, mobility, or volume through treatment is the anticipated performance of the treatment technologies, with respect to these parameters, a remedy may employ.
- o Short-term effectiveness addresses the period of time needed to achieve protection and any adverse impacts on human health and the environment that may be posed during the construction and implementation periods until cleanup goals are achieved.
- o Implementability is the technical and administrative feasibility of a remedy, including the availability of materials and services needed to implement a particular option.
- o Cost includes estimated capital and operation and maintenance costs, and net present worth costs.
- o State acceptance indicates whether, based on its review of the RI/FS and Proposed Plan, the State concurs with, opposes, or has no comment on the selected remedy at the present time.

- o Community acceptance refers to the public's general response to the alternatives described in the Proposed Plan and the RI/FS reports.

ANALYSIS

Comparison Among Soil (SC) Alternatives

- o Overall Protection of Human Health and the Environment

Alternative SC-1 does not meet the remedial objectives, thus it is not protective of human health and the environment. As a result of this alternative, the groundwater would continue to be contaminated directly or indirectly by the soil (groundwater percolating through soil into the groundwater) for some unknown period. Alternatives SC-3, SC-4 and to some extent SC-5 would meet the remedial objective of protecting the groundwater from the soil source by achieving the cleanup levels in soils. Therefore, alternatives SC-3, SC-4 and SC-5 (to a lesser extent) are protective of human health and the environment.

- o Compliance with ARARs

All technologies proposed for use in Alternative SC-3 through SC-5 would be designed and implemented to satisfy all ARARs. federal and state regulations dealing with the handling and transportation of hazardous wastes to a fully EPA-approved off-site treatment facility would be followed. Under Alternative SC-4, treated soils would not longer constitute a potential source of groundwater contamination and could therefore, be redeposited on-site in compliance with all RCRA standards.

- o Long-Term Effectiveness and Permanence

Alternative SC-1 would only monitor the migration of the contaminants and would not provide treatment or containment. Therefore, it would not provide effective or permanent long-term protection of groundwater at the Site.

Alternatives SC-3, SC-4 and SC-5 have similar abilities to mitigate the risks through the removal and treatment of site contaminants to meet the required cleanup levels. Alternatives SC-3 and SC-4 are highly effective, since they effectively can remove the contaminants from the soil. Alternative SC-5 is intended to have a similar ability to mitigate soil contamination, however due to the technical limitations of the in-situ process, SC-5 may not ensure complete remediation of soils. The technical limitations inherent in this technology include decreased efficiency for very shallow contamination, and because of the possible need for supplementation with other treatment methods.

o Reduction in Toxicity, Mobility, or Volume

Alternative SC-1 would provide a very slow and gradual reduction in toxicity through rainfall percolation, but there would be no treatment to reduce the mobility, toxicity or volume of contamination in a reasonable timeframe. It would provide no reduction in contaminant mobility or volume.

Alternatives SC-3, SC-4, and SC-5 are similar in that each would result in significant reductions in the toxicity, mobility, and volume of the treated material through treatment. Material toxicity would be reduced by thermal destruction of contaminants in Alternatives SC-3 and SC-4 and by off-site treatment of the condensed organic product in SC-5. Alternative SC-3 would provide the greatest degree of reduction in toxicity of the contaminants followed by SC-4 and SC-5.

o Short-Term Effectiveness

The implementation of Alternative SC-1 would not result in additional risk to the community during implementation, since no action would be taken. Alternatives SC-3, SC-4, and SC-5 include activities such as contaminated soil excavation and off-site transport or on-site treatment that could potentially expose residents to volatilized contaminants and contaminated dust. Engineering controls and other measures (e.g. restricting access to the Site to authorized personnel only) would effectively eliminate any significant impact these activities would have on nearby residents. Alternative SC-5 includes in-situ treatment of contaminated soils, so exposure risks to residents from excavation is much less of a concern for this alternative than SC-3 and SC-4. Under alternatives SC-4 and SC-5, proper air emission control units would be installed to minimize the potential for public health exposures because of low-level emissions from the on-site treatment units.

Alternative SC-1 would result in a lower overall risks to workers than other alternatives, since subsurface soil is not disturbed. Alternatives SC-4 and SC-5 provide treatment on-site, thereby reducing potential risks to residents along transportation routes. Alternatives SC-3, SC-4, and SC-5 would present a potential for worker exposure to volatilized contaminants during waste excavation and/or handling. To minimize and/or prevent such exposures, use of personal protection equipment would be necessary.

SC-1 would be implemented in approximately one month. Alternatives SC-3, SC-4 and SC-5 would be implemented in about 3.5, 3.5 and 4 years, respectively.

o Implementability

Components of Alternatives SC-1, SC-3, SC-4 and SC-5 would utilize relatively common construction equipment and materials. Little construction difficulty would be encountered with any of the alternatives. However, Alternative SC-1 would be the easiest to implement.

The technologies proposed for use in the alternatives are proven and reliable in achieving the specified process efficiencies and performance goals. Low temperature thermal enhanced volatilization and in-situ vacuum extraction have been successfully tested at other Superfund sites. However, there is a greater degree of uncertainty regarding the achieving of cleanup levels using in-situ vacuum extraction, since this technology only has been utilized on a limited full-scale basis at similar contaminant concentration levels.

o Cost

The total present worth costs for the alternatives evaluated range from \$385,600 (in-situ vacuum extraction) to \$5,000,000 (off-site treatment and disposal). The present worth calculation uses a 5% discount rate, and a 30-year operational period in the case of SC-1. All other source control alternatives would not require any operation and maintenance cost. Therefore, present worth for these alternatives (SC-3, SC-4 and SC-5) would be the same as the capital cost. SC-4 provides the same protection as Alternative SC-3 at a fraction of the cost (\$700,000 versus \$5,000,000). Although Alternative SC-5 is significantly less expensive than SC-3 and SC-4, it may not provide the same level of protection.

o State Acceptance

NYSDEC concurred with the selection of Alternative SC-4.

o Community Acceptance

The community have expressed support for the alternative selected for the remediation of the soils.

Comparison of the Groundwater (GW) Alternatives

o Overall Protection of Human Health and the Environment

The no-action alternative would not protect human health and the environment. Existing contamination would continue to degrade the aquifer and migrate off-site.

Alternative GW-2 would not ensure protection of the health of future users of the aquifer nor would it improve the overall quality of the aquifer or prevent the continued migration of contamination.

Each of the alternatives GW-3A, GW-3B, GW-5A and GW-5B would be significantly more protective than GW-1 or GW-2, since they would reduce the toxicity, mobility, and volume of contaminants in the aquifers. Each treatment alternative considered would equally protect human health and the environment; however, the amount of time required to achieve the ARARs varies greatly among alternatives.

o Compliance with ARARs

Alternatives GW-1 and GW-2 would result in contaminant concentrations remaining above ARARs (for drinking water or protection of the groundwater resources) for a long period of time (estimated at 100 years).

Alternatives GW-3A, GW-3B, GW-5A and GW-5B would be designed to achieve all drinking water standards as well as those required for groundwater protection in the treated water stream which is to be reinjected. Each of these alternatives would be capable of providing the required contaminant removal levels. Because experience with UV-chemical systems is limited, its effectiveness is slightly less certain but considered achievable. Each of the alternatives would comply with federal and state air emission standards as well as regulations for the handling and disposal of the generated wastes (e.g. spent carbon).

o Long-Term Effectiveness and Permanence

Alternative GW-1 does not provide treatment but would attempt to restrict usage of contaminated groundwater. Alternative GW-2 provides short-term treatment, but would not restore the contaminated aquifer for its best beneficial future use.

Alternatives GW-3A, GW-3B, GW-5A, and GW-5B all reduce the potential risks associated with groundwater ingestion by extracting, treating, and recharging the treated groundwater to remove contaminants from the aquifer. The time required to achieve these risk reductions depends on the effective extraction rates from the aquifer and limitations on extraction system placement due to the large area of the contaminant plume. Long-term effectiveness of each system is dependent on monitoring and maintenance of the treatment system.

Alternatives GW-1 and GW-2 would take approximately 100 years to achieve the remedial action objectives. Alternatives GW-3A and 5A would theoretically achieve the remedial action objectives in

62 years, whereas GW-3B and 5B would achieve the remedial action objectives in approximately 16 years.

Proper air pollution control measures would be established under alternatives GW-3A and GW-3B to offset potential risks from the air stripper(s), while no air pollution control measures are deemed necessary for alternatives GW-5B and 5A. Alternatives GW-3A and GW-3B require the disposal of more spent carbon than GW-5A and GW-5B, since carbon adsorption is used.

o Reduction in Toxicity, Mobility, or Volume

Alternative GW-1 would very slowly and gradually reduce the toxicity of contaminants through dilution but there would be no treatment to reduce toxicity, mobility or volume. Alternative GW-2 would reduce the toxicity and volume of contaminants more rapidly than GW-1. Neither Alternative GW-1 nor GW-2 would permanently reduce the mobility of the contaminants. For alternative GW-2, the off-site portion of the contaminated groundwater plume would continue to migrate downgradient, and reduction of toxicity, mobility and volume would be achieved only by natural attenuation.

Alternatives GW-3A, GW-3B, GW-5A and GW-5B would reduce the toxicity, mobility, and volume of contaminants in the aquifers to a greater extent than GW-1 and GW-2. Alternatives GW-3B and 5B would reduce the toxicity, mobility, and volume to a greater extent and at a much faster rate than the other alternatives. Alternatives GW-3A and GW-3B would use air stripping and carbon adsorption to remove the contaminants, while GW-5A and GW-5B would oxidize most of the organic compounds.

o Short-Term Effectiveness

Implementation of Alternative GW-1 would result in no additional risk to the community during remedial activities, since no treatment would occur. Alternative GW-2 could present additional risks to the community resulting from the installation of the extraction wells and pipelines for transportation of contaminated groundwater. Alternatives GW-3A, GW-3B, GW-5A and GW-5B include excavation activities, installation of the collection and reinjection system, and construction of the treatment plant which could result in potentially exposing residents to volatilized contaminants and contaminated dust. The treatment plant would be constructed on-site. Proper engineering controls would ensure that the impact of such activities would be insignificant. All alternatives except Alternatives GW-1 and GW-2 would provide a process residual requiring proper handling and disposal.

Alternative GW-1 would result in no additional risk to workers, and GW-2 would result in a lower overall worker risk than other alternatives because of the limited soil disturbance activities.

Personal protection equipment would be used under alternatives GW-3A, GW-3B, GW-5A and GW-5B to minimize the worker's potential exposure to volatilized contaminants during installation of the collection, treatment, and recharge systems.

GW-1 would be implemented in approximately one year. Each of the remaining alternatives would be implemented in about 3 years.

o Implementability

Alternative GW-1 would be easily implemented. Alternative GW-2 would require institutional management to maintain and operate the pumping system and to coordinate with the Old Bethpage Landfill treatment system. Alternatives GW-3A, GW-3B, GW-5A and GW-5B would utilize relatively common construction equipment and materials. Little construction difficulty would occur with any of the alternatives.

The air stripping and carbon adsorption technologies proposed for use in Alternatives GW-3A and GW-3B are proven and reliable in achieving specified process efficiencies and performance goals. While there has been limited experience with UV-chemical oxidation, it has been successful in several groundwater treatment facilities.

All proposed technologies are readily available from a number of sources, with the exception of UV-chemical oxidation.

Alternatives GW-3A, GW-3B, GW-5A, and GW-5B would require institutional management of the operation and maintenance of the treated groundwater reinjection systems. Siting the treatment facility would not present any problems as there is enough space available on-site. Location of associated off-site facilities (e.g. piping, pumps, extraction wells and reinjection wells) would be more complex as both technical and land use factors would be considered.

Off-site disposal facilities are available for the disposal of the pretreatment sludge and spent carbon generated from Alternatives GW-3A, GW-3B, GW-5A and GW-5B.

o Cost

The present worth costs of all GW alternatives ranged from \$464,400 (GW-1) to \$28,987,000 (GW-3A). Alternative GW-1 would be least expensive followed by GW-2, GW-5B, GW-3B, GW-5A and GW-3A. Of the alternatives providing complete remediation of the groundwater contamination, Alternative GW-3B provides the lowest present worth cost, \$15,620,400.

- o State Acceptance

NYSDEC concurs with the selection of Alternative GW-3A for groundwater treatment.

- o Community Acceptance

The community have expressed support for the alternative selected for the remediation of the groundwater.

Comparison of Building Alternatives (BD)

- o Overall Protection of Human Health and the Environment

In Alternative BD-1, hazardous material would be left in the building. Human health and the environment remain protected only as long as building security could be effectively enforced and building integrity maintained. Alternative BD-2 would remove all hazardous material from the building, so it would be fully protective of human health and the environment. In addition, Alternative BD-2 allows for future reuse of the building.

- o Compliance with ARARs

Alternative BD-1 would not contravene any ARARs, since no action would be taken. Alternative BD-2 would comply with the ARARs including RCRA land disposal restrictions as well as those regulations related to the transport of the wastes to an off-site facility. The off-site treatment facility would be fully EPA-permitted and therefore meet applicable regulations.

- o Long-Term Effectiveness and Permanence

Alternative BD-1 would not alter conditions within the building; hazardous materials would remain in the building. Public protection would rely on maintaining building security which might be difficult to enforce. The building could not be used for any purpose. Alternative BD-2 would remove all hazardous materials from the building for off-site treatment and disposal so that long-term exposure risks from the building would be eliminated. Painting and sealing the building (Alternative BD-2) would provide additional protection and would allow for unrestricted use of the building in the future.

- o Reduction in Toxicity, Mobility or Volume

Alternative BD-1 would provide no reduction in toxicity or volume of contaminants; mobility is not an issue since the building is self-contained. Alternative BD-2 would provide for complete reduction in toxicity and volume, since all contaminated material would be removed from the building.

o Short-Term Effectiveness

Implementation of BD-1 would result in no additional risks to the community or the environment as long as building security and integrity could be maintained. Alternative BD-2 involves removal and transport of the contaminants from the building, so there would be some minimal public exposure risks as well as environmental impacts from potential waste spills resulting from possible transport accidents during remedial activities. Worker exposure risks would be minimized through the use of personal protection equipment. Long-term maintenance would continue indefinitely for Alternative BD-1. Building decontamination, Alternative BD-2, could be accomplished in approximately 3 months.

o Implementability

Both alternatives are readily implementable; neither involves any major construction activities. Methods and services for building decontamination are technically feasible and readily available. Alternative BD-1 would require institutional management i.e., a long-term building maintenance program, whereas Alternative BD-2 would not require any long-term management.

o Cost

The present worth costs for Alternatives BD-1 and BD-2 are \$41,100 and \$186,200, respectively.

o State Acceptance

NYSDEC concurs with the preferred building alternative selected.

o Community Acceptance

The community have expressed support for the alternative selected for the remediation of the building.

Comparison of the Underground Tank (T) Alternatives

o Overall Protection of Human Health and the Environment

Alternative T-1 would not protect human health and the environment as the threat of soil and groundwater contamination would not be reduced. The excavation and removal of contaminated tanks and their contents from the Site (T-2) would significantly reduce the potential human health and environmental risks associated with potential leaking of contaminants from tanks into the soil and groundwater.

o Compliance With ARARs

Alternative T-1 would not facilitate compliance with groundwater ARARs, as a continual source of contamination would not be removed. The disposal of the underground tanks (T-2) would eliminate the source of contamination and would satisfy state and federal ARARs. The tanks wastes would be removed, transported, and disposed of in accordance with all regulations. Contaminated soils would be disposed off in accordance with all applicable state and federal ARARs. Soils would be transported to an off-site EPA-permitted treatment and disposal facility; or in the alternative, the soils could be treated on-site using the low temperature thermal treatment unit. After treatment, the soils would not longer be deemed to contain listed RCRA hazardous constituents because it would be treated to below health-based levels and would be treated in accordance with the treatment standards required by RCRA Land Disposal Restrictions.

o Long-Term Effectiveness and Permanence

Under Alternative T-1, the tanks and their associated hazardous wastes would remain as a potential source of soil and groundwater contamination. Alternative T-2, excavation and removal of the underground storage tanks, tank debris, and highly contaminated soil from the Site, would reduce the potential human health and environmental risks associated with the tanks' potential for leaking contaminants into the soil and groundwater in the future.

o Reduction of Toxicity, Mobility or Volume

No significant reduction of toxicity, mobility or volume would result from the implementation of the no-action alternative. Alternative T-2, excavation and off-site treatment, would result in a permanent reduction of toxicity, mobility and volume. The wastes would be completely removed and either destroyed at the treatment facility or reused if practical.

o Short-Term Effectiveness

Alternative T-1 would result in no additional risk to the community during implementation.

The potential public health threats to workers and area residents associated with the implementation of Alternative T-2 include: direct contact of workers with tank contents and potentially contaminated soils; inhalation of fugitive dust, organic vapors, and emissions generated during construction and excavation activities; and improper handling of soil and hazardous liquids. Several steps would be taken to minimize these threats including: Site access would be restricted to authorized personnel only; and, dust control measures such as wind screens and water sprays

would be used to minimize fugitive dust emissions.

The risk to workers during excavation would be minimized by the use of adequate personal protection equipment to prevent direct contact with potentially contaminated soil, liquids, and inhalation of fugitive dust and volatile organic compounds.

Other potential short-term impacts contemplated as part of T-2 would be an increase in traffic and noise pollution resulting from hauling soils (as necessary), hazardous liquids, and tanks to an off-site treatment facility, as well as the traffic associated with transporting new soil for backfill to the Site. Transportation of excavated hazardous liquids might introduce short-term risks with the possibility of spillage along the transport route and potential exposure of the public to hazardous material. A spill contingency plan would be developed to address and minimize the likelihood and potential impact of this occurrence. The actual remediation period for this alternative is estimated to be 8 weeks.

o Implementability

Alternative T-1 is easily implementable, since no action would be taken. All the components of Alternative T-2 are well developed and commercially available. The contained tanks and related wastes would have to undergo a series of analyses prior to acceptance for treatment at the EPA-permitted off-site facility. Sufficient land is available at the Site for mobilization and temporary storage of the excavated soil and materials awaiting pre-transport decontamination. Excavation, treatment tank decommissioning, transportation to an off-site treatment facility, solid and liquid waste disposal, and restoration of the Site can be performed without any major difficulties.

o Cost

The total present worth cost of Alternative T-1 is \$64,300. The total present worth cost of Alternative T-2, which represents the estimated construction cost for the eight week remediation program, is estimated at \$336,300. Operation and maintenance costs have not been included in the cost estimate since the duration of the remediation program is less than one year.

o State Acceptance

NYSDEC concurs with the selection of underground tank alternative T-2.

o Community Acceptance

The community has expressed support for the alternative selected

for the remediation of the underground tanks.

SELECTED REMEDY

The preferred alternative will achieve substantial risk reduction through a combination of source control alternatives SC-4 (low temperature enhanced volatilization of soil contaminants) and T-2 (tank removal and off-site treatment), with active restoration of the groundwater (GW-3B), and building decontamination (BD-2).

The preferred alternative achieves this risk reduction more quickly and at substantially less cost than the other options. Therefore, the preferred alternative will provide the best balance of trade-offs among alternatives with respect to the evaluating criteria. Based on the information available at this time, EPA and the NYSDEC believe that the preferred alternative will be protective of human health and the environment, will comply with ARARs, will be cost effective, and will utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. The remedy also will meet the statutory preference for the use of treatment as a principal element.

STATUTORY DETERMINATIONS

1. Protection of Human Health and the Environment

The selected remedy is considered fully protective of human health and the environment. The treatment of the contaminated soils through the low temperature enhanced volatilization process will remove the organic contaminants from the soil. When combined with the removal of the underground tanks, it will result in the elimination of both long-term sources of groundwater contamination. The extraction and treatment of the contaminated groundwater using air stripping and carbon adsorption will provide excellent protection of both human health and the environment. Decontamination of the building will ensure that public health is protected.

2. Compliance with ARARs

The soil portion of the remedy (SC-4: excavation and on-site treatment of the contaminated soils) will comply with all action-specific ARAR's. Contaminated soils will be treated to health-based levels. Since the treated soils no longer will constitute a source of groundwater contamination, they will be redeposited on-site in compliance with all RCRA standards. The groundwater portion of the selected remedy (GW-3B: extraction and treatment of the contaminant plume) will comply with all related ARARs including NY Groundwater Quality Standards and Federal Maximum Contaminant Levels.

The building decontamination (BD-2) and underground tank removal (T-2) will comply with all ARAR's. The off-site treatment facility will be fully RCRA permitted and, therefore, will meet all applicable regulations. Wastes will be treated using specific technologies or specific treatment levels. The remedy will comply with regulations including RCRA Standards Applicable to Owners and Operators of TSD Facilities, RCRA Standards Applicable to Transport of Hazardous Wastes, NY Air Quality Standards, NY Hazardous Waste Manifest System Rules, and NY Hazardous Waste Treatment Storage and Disposal Facility Permitting Requirements.

A summary of ARARs associated with the selected remedy is presented in Table 13.

3. Cost Effectiveness

The selected remedy is cost effective in that it provides overall effectiveness proportional to its cost. The total capital and present worth costs of the remedy are \$6,200,000 and \$16,800,000, respectively. In proportion to the total capital cost, 11 per cent is attributed to the soil portion; 80 per cent to the groundwater portion; and the remaining 9 per cent to the building and underground tank portion. The cost of the soil component is higher than the in-situ vacuum extraction option; however, low temperature treatment provides complete certainty with regard to efficiency, at a fraction of the cost associated with the off-site treatment option. Likewise, although the cost of the air stripping/carbon adsorption is higher than the UV/oxidation, air stripping/carbon adsorption provides a higher degree of certainty that all groundwater contaminants will be removed.

4. Utilization of Permanent Solutions and Alternative Treatment Technologies to the Maximum Extent Practicable

The selected remedy utilizes permanent solutions and treatment technologies to the maximum extent practicable. Of those alternatives which are protective of human health and the environment, and comply with ARARs, the selected remedy best balances the goals of long-term effectiveness and permanence, reduction of toxicity, mobility or volume achieved through treatment, short-term effectiveness, implementability, cost, and also achieves the statutory preference for treatment as a principal element and has state and community acceptance.

After the soil is treated and the underground tanks are removed, the potential for future releases of waste to the environment will be eliminated. The indirect and direct risks posed by the soil and tanks as a continued source of groundwater contamination will be eliminated. This action, in conjunction with the groundwater extraction and treatment component, will restore the aquifer to its most beneficial use and will meet all federal and

state standards.

No short-term adverse impacts and threats to human health and the environment are foreseen as the result of implementing the selected remedy. However, to minimize and/or prevent worker exposure to contaminants, personal protection equipment will be used.

The selected remedy will require construction of on-site soil and groundwater treatment facilities. No technological problems should arise as all the treatment technologies are well established, readily available and possess a proven track record.

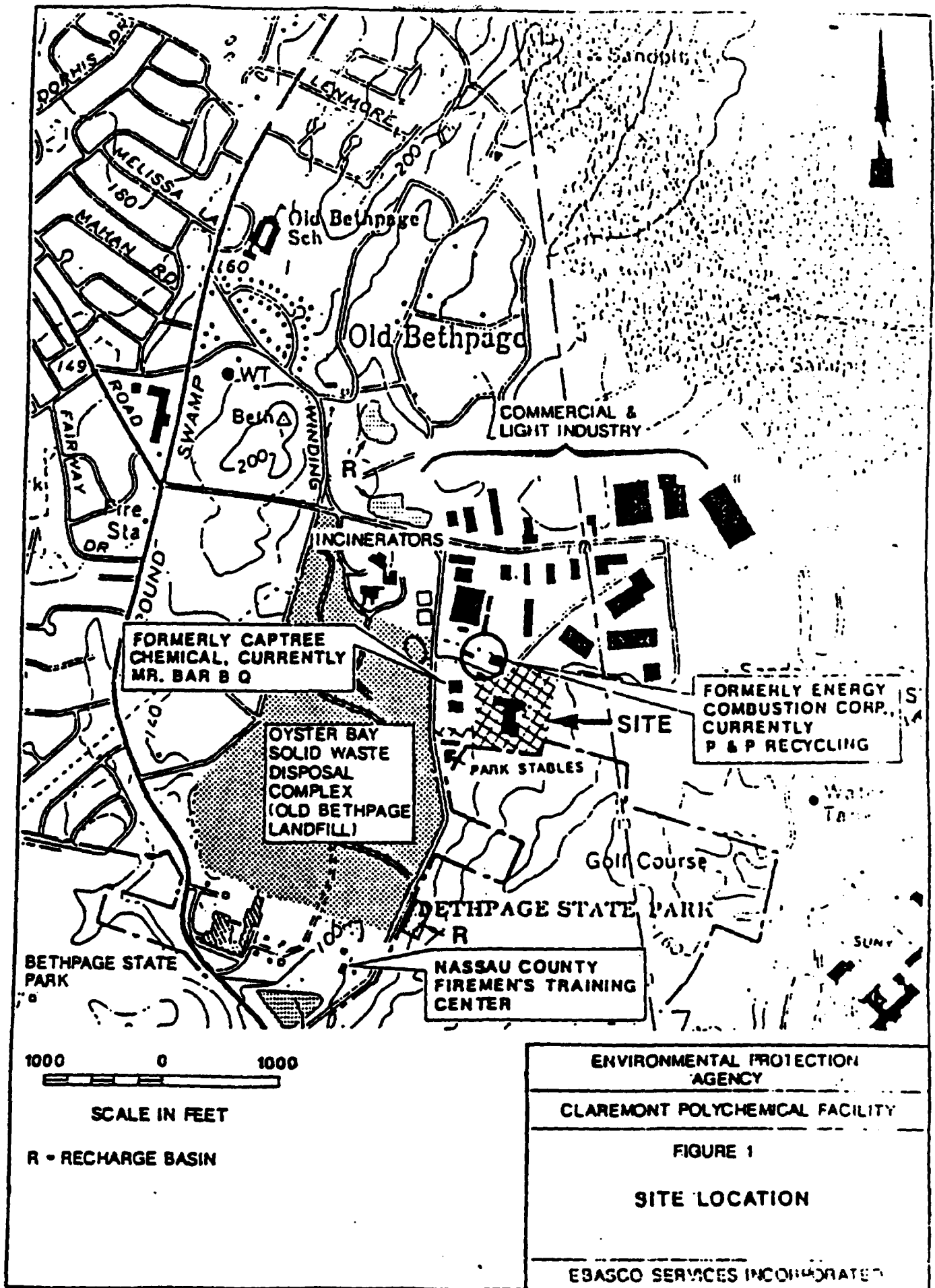
5. Preference for Treatment as the Principal Element

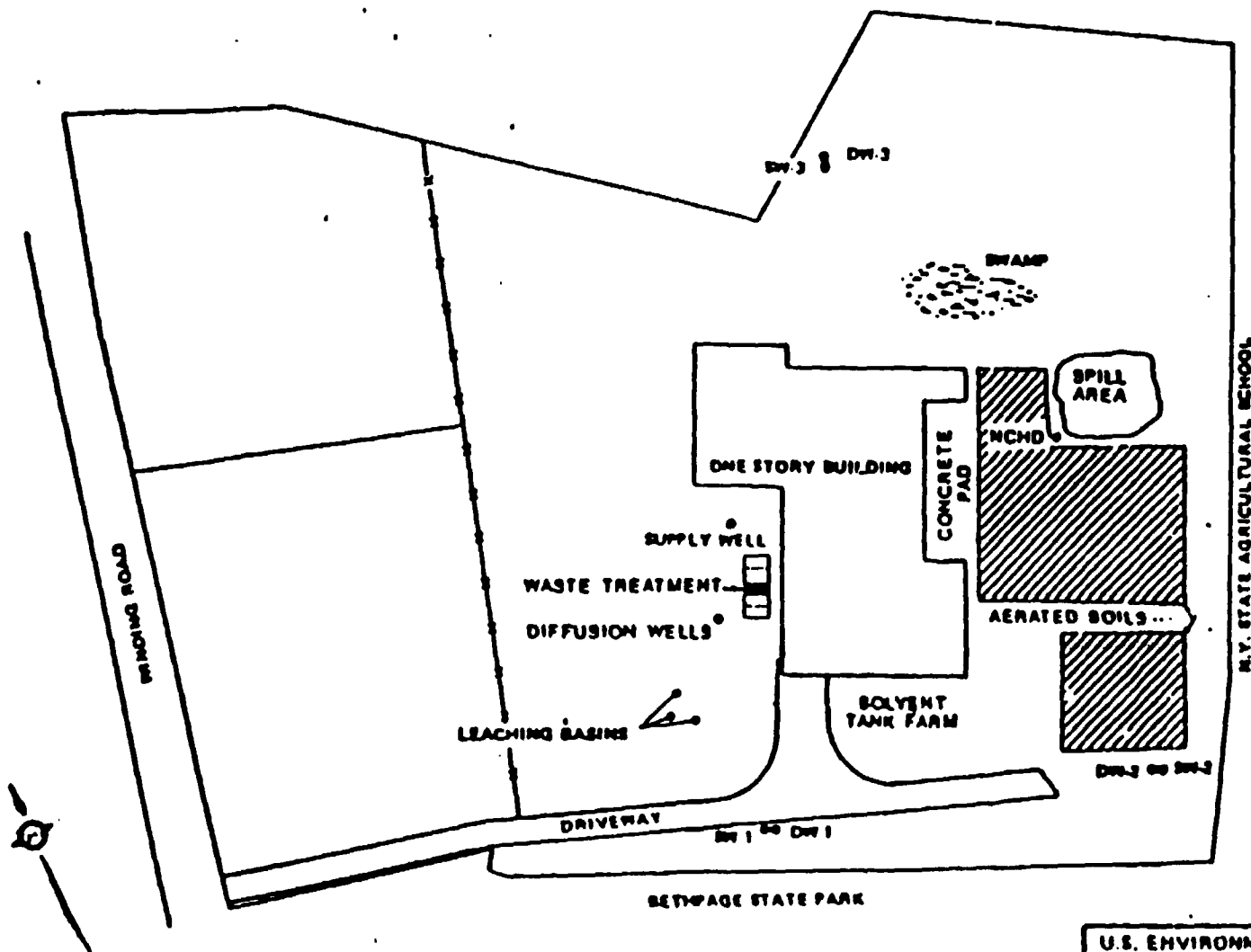
The selected remedy fully satisfies this criterion for the source of contamination (soil and underground tanks), groundwater, and building contamination which are considered the principal threats at the Site. Therefore, the statutory preference for remedies that employ treatment as a principal element is satisfied.

DOCUMENTATION OF SIGNIFICANT CHANGES

The Proposed Plan for the Claremont Polychemical site was released to the public on August 24, 1990. The Proposed Plan identified Alternative SC-4 combined with Alternatives GW-3B, BD-2 and T-2 as the preferred alternative. EPA reviewed all written and verbal comments submitted during the public comment period. Upon review of these comments, EPA determined that no significant changes to the selected remedy, as it was originally identified in the Proposed Plan, are necessary.

APPENDIX A. FIGURES





0 50 100
SCALE FEET

U.S. ENVIRONMENTAL PROTECTION AGENCY
CLAREMONT POLYCHEMICAL SITE
FIGURE 2
SITE MAP

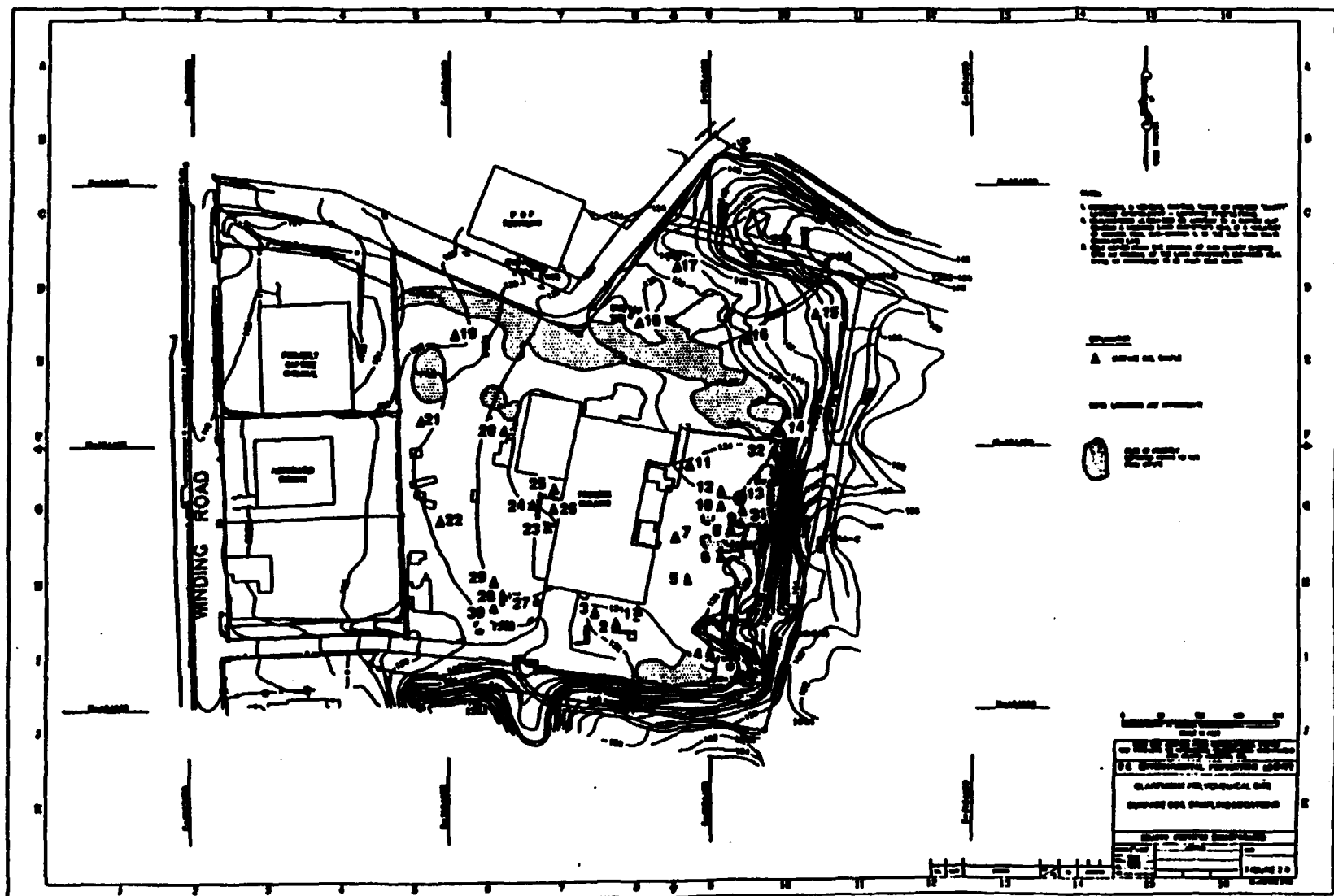


Figure 3

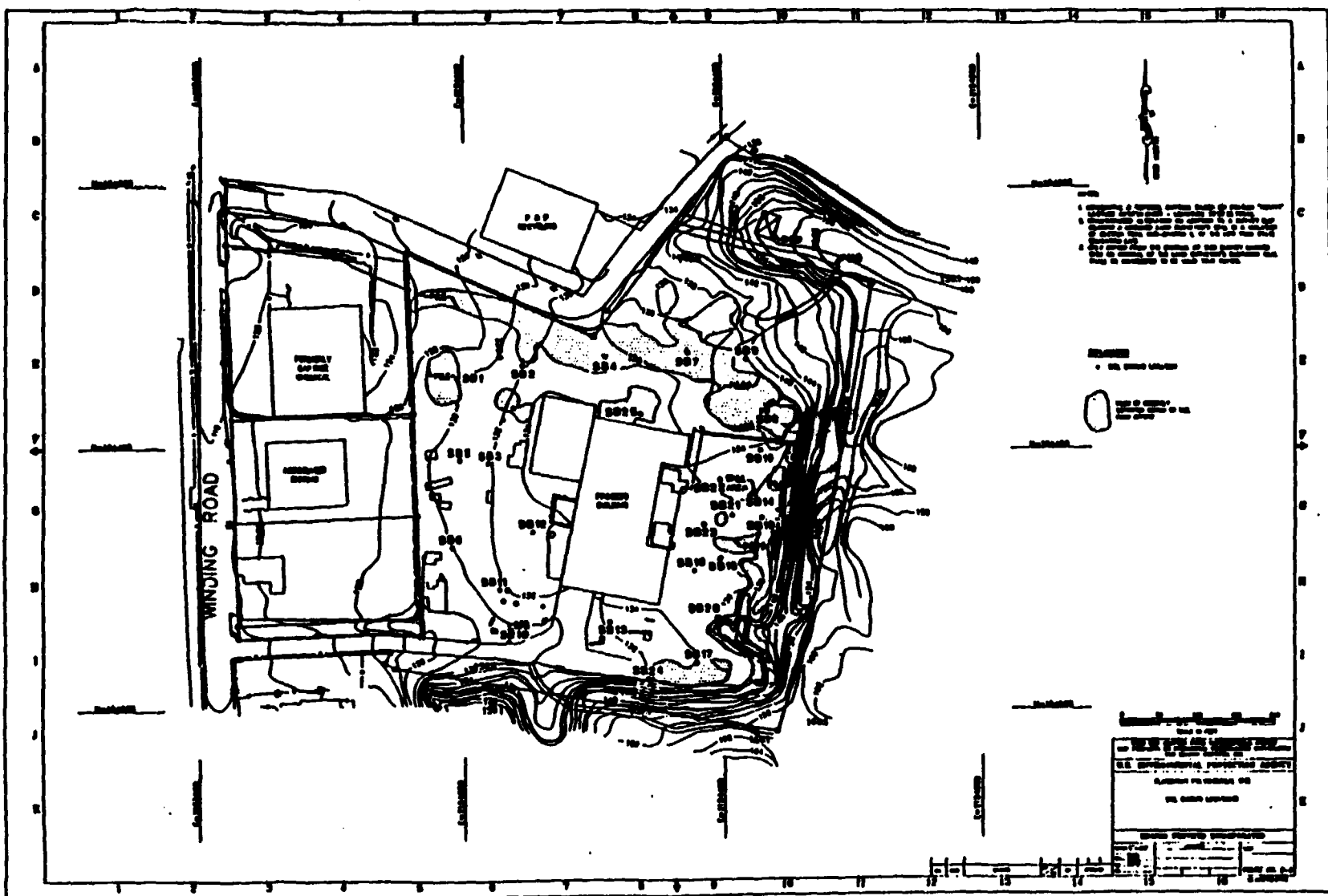


Figure 4

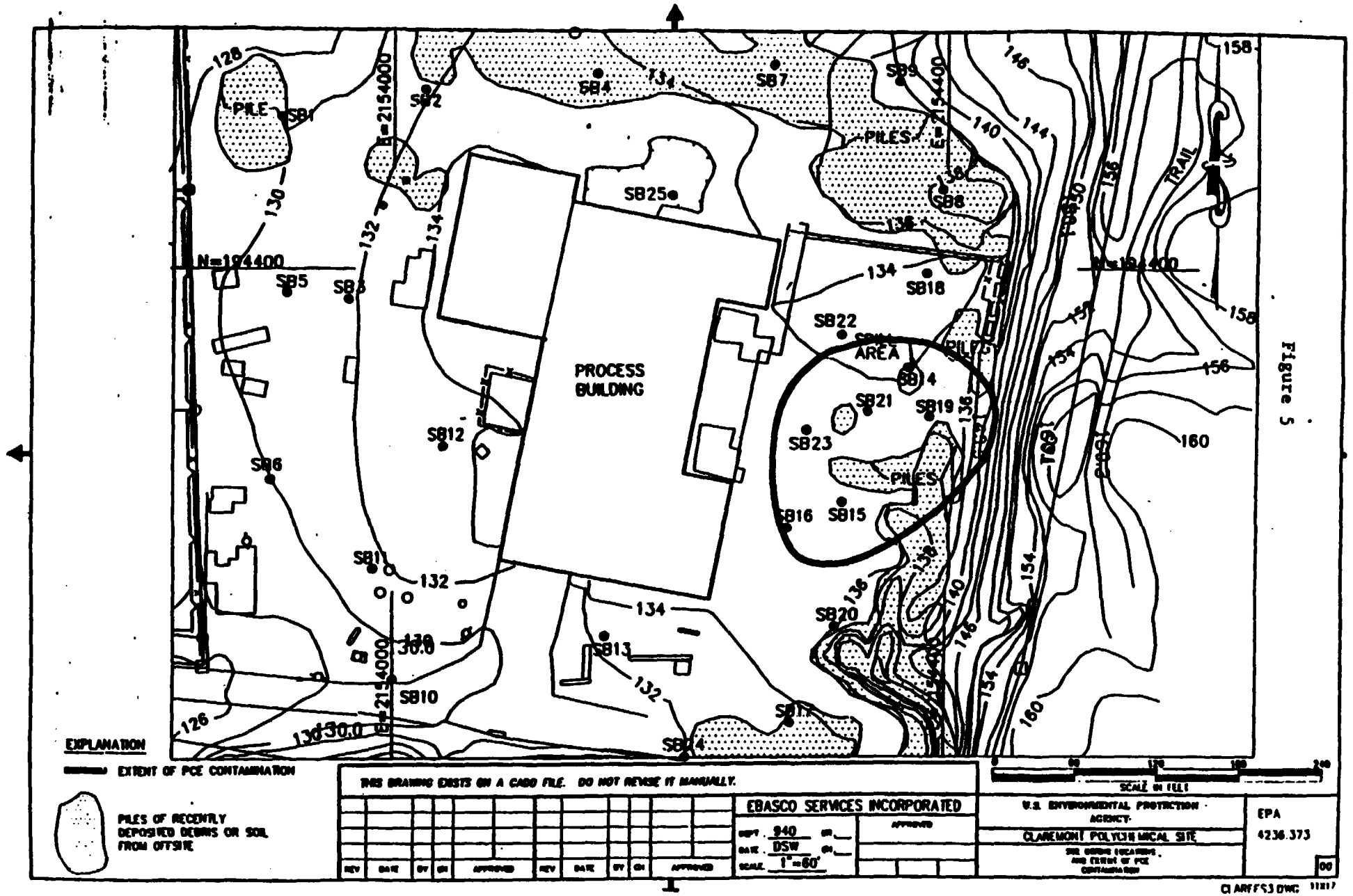


Figure 6

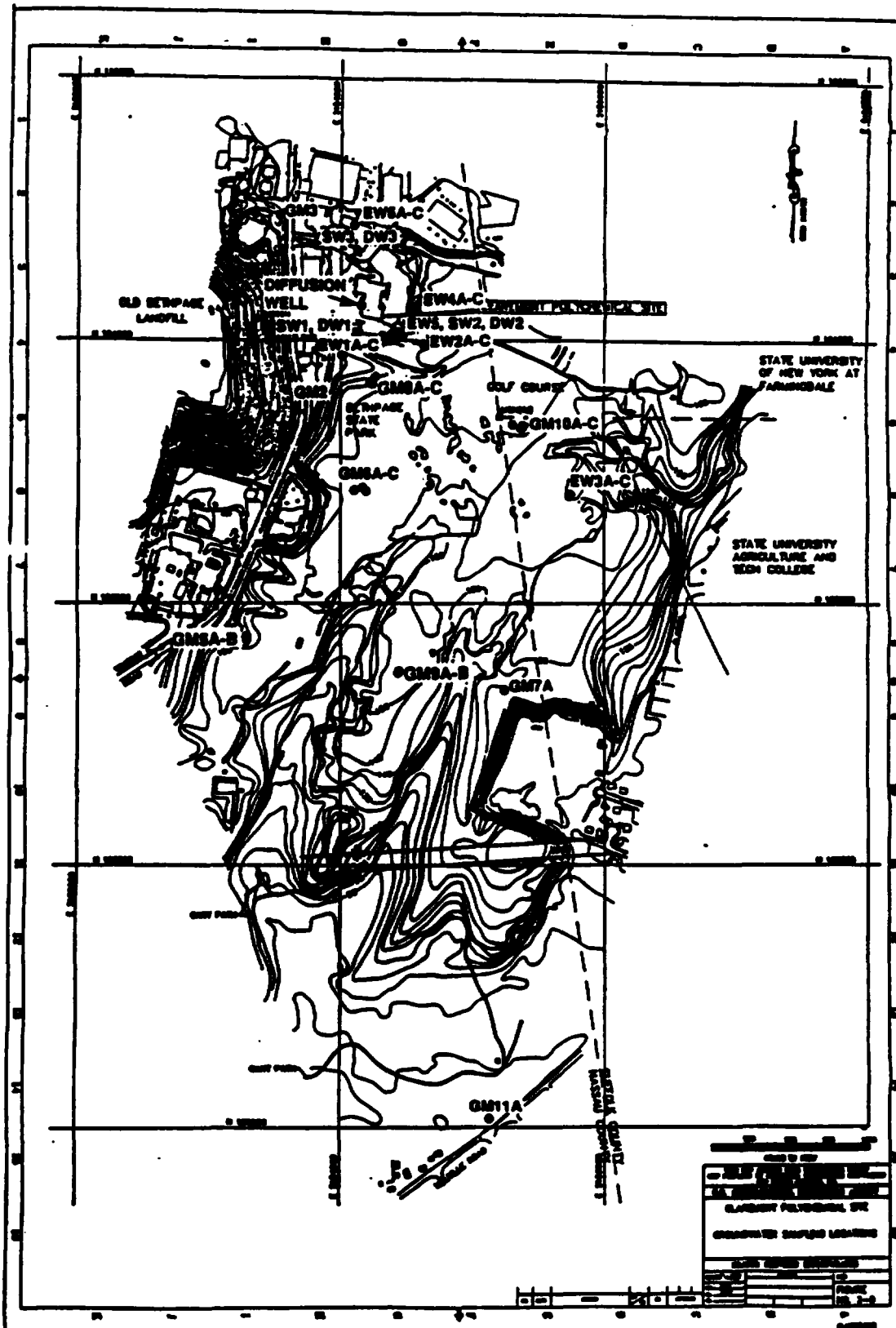
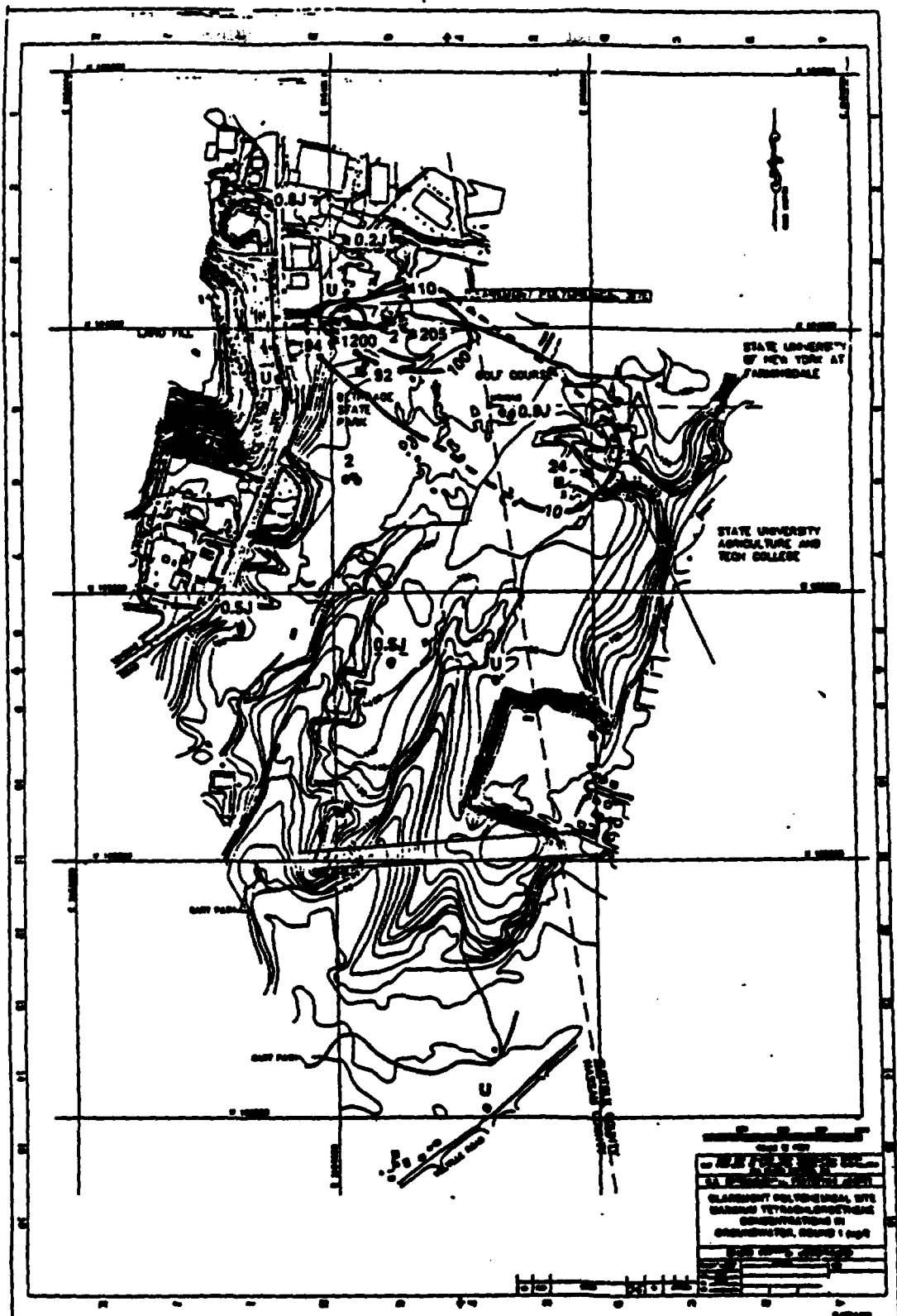


Figure 7.



U - NON-DETECT

ESTIMATED CONCENTRATION CONTOURS

**NOTE: CONTOUR INTERVALS INCREASE BY A FACTOR OF 10
HIGHEST CONTOUR LEVEL REPRESENTS 1000 ug/l**

APPENDIX B. TABLES

Table 1
Site History Summary

- **CONSTRUCTION OF THE CLAREMONT POLYCHEMICAL FACILITY BEGAN IN 1966**
- **PLANT OPERATION BEGAN IN 1968**
- **MORE THAN A THOUSAND DRUMS WERE DISCOVERED IN 1979 BY THE NASSAU COUNTY DEPARTMENT OF HEALTH (NCDOH)**
- **MOST OF THE DRUMS WERE GONE AND AREA OF CONTAMINATED SOIL (SPILL AREA) WAS DISCOVERED IN 1980 BY NCDOH**
- **SOILS WERE EXCAVATED AND PLACED ON PLASTIC LINERS IN 1980 BY THE COMPANY**
- **COMPANY ENTERED INTO CHAPTER 11 PROCEEDINGS IN 1980**
- **NEW YORK DEPARTMENT OF LAW ASSUMES THE LEAD ON THE SITE AND ATTEMPTS TO NEGOTIATE AN AGREEMENT WITH RESPONSIBLE PARTY**
- **SITE RECOMMENDED FOR PLACEMENT IN NATIONAL PRIORITY LIST IN OCTOBER 1984**
- **SITE WAS FINALLY INCLUDED IN NATIONAL PRIORITY LIST IN JUNE 1986 (RANKED 614)**
- **EPA ASSUMES THE LEAD IN 1986 AND SENDS OUT NOTIFICATION LETTER TO POTENTIALLY RESPONSIBLE PARTY (PRP) IN NOVEMBER 1987**
- **NO RESPONSE WAS RECEIVED AND FUNDS FOR REMEDIAL INVESTIGATION/FEASIBILITY STUDY (RI/FS) ARE ALLOCATED IN MARCH 1988**
- **EBASCO SERVICES IS CONTRACTED BY EPA TO CONDUCT RI/FS (1st OPERABLE UNIT) IN MARCH 1988**
- **EPA CONDUCTS REMOVAL ACTION IN OCTOBER 1988 TO STABILIZE WASTES**
- **SECOND RI/FS (2nd OPERABLE UNIT) IS OPEN IN APRIL 1989 TO ADDRESS THE DISPOSAL OF WASTES CONTAIN IN HOLDING UNITS (DRUMS, BASINS, ETC)**
- **IMPLEMENTATION OF REMEDY FOR 2nd OPERABLE UNIT STARTS IN SEPTEMBER 1989**
- **RI/FS FOR 1st OPERABLE UNIT IS FINALIZED AND REPORTS ARE RELEASED FOR PUBLIC COMMENT IN AUGUST 1990**

TABLE 2

COMPARISON OF CONCENTRATION RANGES OF METALS IN
SURFACE SOIL TO TYPICAL REGIONAL BACKGROUND LEVELS

Element	Concentration Range in Typical Eastern U.S. Background Soil (ppm*)	Concentration Range in Surface Soil (ppm)
Al	10000-300000	1220-5830
Sb	<1-500 ⁽¹⁾	ND-60
As	5-15 ⁽¹⁾	2.2-9.3
Ba	100-3500	6.8-258
Be	<1-7 ⁽¹⁾	ND-1.2
Cd	0.01-7	ND-33.1
Ca	100-400000	78.7-49700
Cr	10-80 ⁽¹⁾	3.0-75.4
Co	<3-70 ⁽¹⁾	ND-3.1
Cu	2-100	6.4-230
Fe	7000-550000	2460-13900
Pb	3-30 ⁽¹⁾	2.2-327
Mg	600-6000	364-29200
Mn	100-4000	10.6-203
Hg	0.2-0.6 ⁽¹⁾	ND-0.22
Ni	4-30 ⁽¹⁾	ND-14.1
K	400-30000	ND-335
Se	0.1-2.0	ND-1.3
Na	750-7500	ND-263
V	20-500	9.2-26.6
Zn	10-300	6.7-3280

(*) - Dragun, 1988.

(1) - Conner, J.J. and H.T. Shacklette, 1975.

(ND) - Not detected

Table 3

CLAREMONT POLYCHEMICAL SITE
Subsurface Soil Borings (ug/kg)

Compound	0-2 feet	2-4 feet	5-10 feet	10-15 feet	15-20 feet	20-30 feet	30-40 feet	40-50 feet	50-65 feet	Unsat. Soil 265 feet	Saturated Soil 265 feet
<u>Volatile Organics</u>											
Methylene Chloride	ND-8	ND-7	-	-	-	-	ND-5	-	-	-	ND-5
Tetrachloroethene	ND-25000	ND-100	ND-210	-	ND-19	ND-170	ND-46	ND-15	ND-28	ND-200	ND-110
1,1,2-Dichloroethene	ND-1	ND-36	ND-3	-	-	-	-	-	ND-18	ND-25	ND-71
Trichloroethene	ND-11	-	ND-17	-	-	ND-1	-	-	ND-3	ND-13	ND-9
1,1,2-Trichloroethane	-	-	-	-	-	-	-	-	-	ND-4	-
Acetone	ND-11	ND-270	ND-6	-	ND-14000	-	ND-34	ND-20	-	-	ND-110
Toluene	ND-82	ND-55	ND-7	ND-3	ND-5	ND-70	ND-7	ND-15	ND-32	ND-11	ND-11
2-Butanone	-	ND-10	ND-26	-	-	-	-	-	-	-	ND-3300
Xylenes	ND-150	-	ND-27	-	-	-	-	-	-	-	-
4-Methyl-2-Pentanone	-	-	-	-	-	-	-	-	-	-	ND-360
<u>Semivolatile Organics</u>											
4-Nitrophenol	ND-130	-	-	-	-	-	-	-	-	-	-
Pentachlorophenol	ND-360	ND-41	-	-	-	-	-	-	-	-	-
2,4-Dinitrotoluene	ND-63	-	-	-	-	-	-	-	-	-	-
2,6-Dinitrotoluene	ND-130	-	-	-	-	-	-	-	-	-	-
1,2,4-Trichlorobenzene	ND-39	-	-	-	-	-	-	-	-	-	-
2-Chloronaphthalene	ND-33000	ND-810	-	-	-	-	-	-	-	-	-
Naphthalene	ND-890	ND-140	-	-	-	-	-	-	-	-	-
2-Methylnaphthalene	ND-90	ND-67	-	-	-	-	-	-	-	-	-
Acenaphthylene	ND-120	-	-	-	-	-	-	-	-	-	-
Acenaphthene	ND-170	ND-200	-	-	-	-	-	-	-	-	-
Dibenzofuran	ND-75	ND-110	-	-	-	-	-	-	-	-	-
Fluorene	ND-150	ND-180	-	-	-	-	-	-	-	-	-
Phenanthrene	ND-1100	ND-1500	-	-	-	-	-	-	-	-	-
Anthracene	ND-590	ND-340	-	-	-	-	-	-	-	-	-
Fluoranthene	ND-2000	ND-1500	-	-	-	-	-	-	-	-	-
Pyrene	ND-1920	ND-950	-	-	-	-	ND-21	-	-	-	-
Benzo(a)anthracene	ND-700	ND-700	-	-	-	-	-	-	-	-	-
Chrysene	ND-960	ND-700	-	-	-	-	-	-	-	-	-
Benzo(b)fluoranthene	ND-880	ND-700	-	-	-	-	-	-	-	-	-
Benzo(k)fluoranthene	ND-880	ND-500	-	-	-	-	-	-	-	-	-
Benzo(a)pyrene	ND-829	ND-740	-	-	-	-	-	-	-	-	-
Indeno(1,2,3-c,d)pyrene	ND-330	ND-260	-	-	-	-	-	-	-	-	-
Dibenzo(a,h)anthracene	ND-209	ND-140	-	-	-	-	-	-	-	-	-
Benzo(g,h,i)perylene	ND-420	ND-280	-	-	-	-	-	-	-	-	-
Dimethylphthalate	-	ND-48	-	-	-	-	-	-	-	-	-
Di-n-butylphthalate	ND-3900	ND-2100	ND-40	-	ND-62	ND-53	ND-1300	ND-65	-	ND-47	-
Butylbenzylphthalate	ND-8200	ND-1500	-	-	-	-	ND-50	-	-	-	-
Di-n-octylphthalate	ND-87	-	-	-	-	-	-	-	-	-	-
Bis(2-ethylhexyl)phthalate	ND-270000	ND-40000	ND-270	ND-100	ND-1500	ND-1600	ND-190	ND-150	ND-170	ND-520	ND-390
Benzoic Acid	ND-120	-	ND-74	-	-	-	-	-	-	-	-

TABLE 3 (Cont'd)
CONCENTRATION RANGES OF ORGANIC COMPOUNDS IN
SUBSURFACE SOIL BORINGS (ug/kg)

<u>Compound</u>	<u>0-2 Feet</u>	<u>2-4 feet</u>	<u>5-10 Feet</u>	<u>10-15 Feet</u>	<u>15-20 Feet</u>	<u>20-30 Feet</u>	<u>30-40 Feet</u>	<u>40-50 Feet</u>	<u>50-65 Feet</u>	Unsaturated	Saturated
										Soil	Soil
										>65 Feet	>65 Feet
<u>Pesticides</u>											
Heptachlor	ND-18	-	-	-	-	-	-	-	-	-	-
Dieldrin	ND-26	-	-	-	-	-	-	-	-	-	-
DDC	ND-70	ND-110	-	-	-	-	-	-	-	-	-
DDD	ND-35	ND-100	-	-	-	-	-	-	-	-	-
DDT	ND-61	ND-80	-	-	-	-	-	-	-	-	-
<u>PCB's</u>											
PCB 1248	ND-600	-	-	-	-	-	-	-	-	-	-
PCB 1254	ND-120	ND-1100	-	-	-	-	-	-	-	-	-
PCB 1260	ND-650	-	-	-	-	-	-	-	-	-	-

(ND) or (-) - Not detected.
All concentrations in ppb.
Depth listed is below grade.

TABLE 3
CONCENTRATION RANGES OF METALS IN
SUBSURFACE SOIL BORINGS AND THEIR COMPARISON TO TYPICAL REGIONAL BACKGROUND LEVELS

Element	Concentration Range Typical Background Soil (ppm)	Concentration Range In Subsurface Soil (ppm)										Unsaturated Soil	Saturated Soil
		0-2 Feet	2-4 Feet	5-10 Feet	10-15 Feet	15-20 Feet	20-30 Feet	20-40 Feet	40-50 Feet	50-65 Feet	>65 Feet	>65 Feet	>65 Feet
Al	10 00-300000	1120-14300	552-13900	735-15800	546-364	437-970	386-702	226-4230	102-1170	335-1920	275-740	201-1330	
Sb	< 500 ⁽¹⁾	ND-5.3	ND-4.7	-	-	-	ND-4.9	ND-7.6	-	-	-	ND-5.3	
As	5-15 ⁽¹⁾	1.4-9.9	1.0-13.2	1.6-7.9	1.9-4.5	1.1-12.5	1.5-3.1	2.1-35	0.72-5.0	1.1-9.6	1.1-6.7	1.0-13.2	
Ba	100-3500	5.4-73.3	2.0-46.3	4.8-49.5	3.9-6.0	2.4-24.3	4.1-11.8	2.3-13.7	ND-7.7	2.7-19.3	ND-5.8	ND-15.2	
Be	< 1 ⁽¹⁾	ND-1	ND-1.1	0.17-1.6	-	0.11-0.33	-	ND-0.92	ND-0.11	0.29-0.41	0.12	-	
Cd	0.01-7	ND-14.1	ND-4.6	ND-3.3	-	ND-0.88	-	ND-0.73	-	-	ND-6.2	ND-2.0	
Ca	100-400000	59.6-32000	27.2-64100	121-405	22.9	64.2-168	57.1-225	ND-307	21.9-142	54.6-257	53.9-172	25.1-1070	
Cr	10-20 ⁽¹⁾	ND-19.8	ND-37.4	ND-17.5	2.5-4.5	ND-10.2	2.6-3.5	ND-45.7	ND-9.7	ND-9.0	ND-20.9	ND-1.9	
Co	< 3 ⁽¹⁾	ND-6.1	ND-7.6	ND-12.2	-	-	ND-1.5	ND-1.3	ND-1.9	ND-1.9	-	ND-1.7	
Cu	2-100	5.3-122	ND-38.3	4.0-51.3	4.7	ND-37.9	1.9-5.3	ND-40.4	2.4-5.1	ND-13.5	3.2-11.1	2.8-152	
Fe	7000-550000	2250-18300	1280-33100	1590-23300	2330-5560	370-13400	563-3410	1380-51500	536-5820	1090-6840	1330-9700	1200-7070	
Pb	2-25 ⁽¹⁾	2.4-90.8	0.38-29.5	1.8-7.2	2.9-3.3	1.5-4.4	1.6-3.5	1.2-5.9	1.1-2.6	2.8-7.7	1.5-6.0	1.2-5.8	
Mg	600-6000	150-18000	45.3-23100	35.6-2180	ND-44.9	ND-34.3	ND-57.9	ND-156	ND-56.8	ND-365	ND-54.2	ND-109	
Mn	100-4000	22-152	7.5-200	12-591	45.7-67.6	1.8-40.4	5.4-21	2.0-28.8	1.4-28.8	7.5-45.9	7.9-25.8	3.1-19.6	
Hg	0.01-0.5 ⁽¹⁾	ND-0.12	-	-	-	-	-	-	-	-	-	-	
Ni	4-30 ⁽¹⁾	ND-17.5	ND-18.6	ND-10.8	-	-	-	-	-	ND-2.9	-	ND-2.5	
K	400-30000	61.4-1250	ND-987	115-1320	ND-122	ND-103	ND-86.2	42.7-185	ND-139	ND-323	ND-111	ND-233	
Se	0.1-2.0	ND-1.4	ND-2.3	ND-1.9	ND-0.76	ND-0.53	ND-0.51	ND-0.73	ND-0.57	ND-0.68	ND-0.73	ND-0.54	
Ag	0.1-5.0	-	-	ND-3.6	-	-	ND-0.58	-	-	-	-	ND-0.65	
Na	750-7500	ND-306	ND-143	ND-65.6	-	ND-1670	-	-	-	-	-	-	
V	29-500	3.8-26.2	2.0-23.9	3.5-37.2	3.3-6.0	4.4-9.1	ND-6.8	ND-105	1.5-12.7	3.5-15.3	ND-23.3	2.7-10.9	
Zn	10-300	7.1-200	ND-47.2	4.90-43.5	2.9-3.2	ND-3.1	-	ND-11.6	-	ND-3.1	ND-3.4	ND-31.1	

(*) - Dragun, J., 1988.

(1) - Conner, J. J. and H. T. Shacklette, 1975.

TABLE 4
CONCENTRATION RANGES OF VOLATILE ORGANIC COMPOUNDS
IN GROUNDWATER BY AREA AT THE CLAREMONT SITE
Rounds 1 & 2 Combined

Compound	Safe Drinking Water Act MCL (ug/l)	NYS DOH MCL (ug/l)	NYS Ambient Water Quality Criteria - Class GA Groundwater (ug/l)	Upgradient Wells (ug/l)	Site Vicinity and Downgradient Wells (ug/l)	Landfill/ Off-Site Plume Wells (ug/l)
Acetone	-	50	-	NO-2	NO-540	NO-710
Benzene	5	5	NO	NO	NO-60	NO-24
Carbon Disulfide	-	50	-	NO	NO-0.2	NO-4
Chlorobenzene	-	5	20 ^(*)	NO	NO-0.4	NO-19
Chloroethane	-	5	-	NO	NO-0.8	NO-7
Chloroform	-	100 ⁽¹⁾	100 ^(*)	NO	NO-1	NO-0.2
1,1-Dichloroethane	-	5	50 ^(*)	NO	NO-17	NO-12
1,2-Dichloroethane	5	5	0.8 ^(*)	NO	NO-6	NO-2
1,1,1-Trichloroethane	7	5	0.02 ^(*)	NO	NO-4	NO
1,2-Dichloropropane	-	5	50 ^(*)	NO	NO	NO-0.3
1,1,1-Trichloroethane	-	5	50 ^(*)	NO	NO-160	NO-0.6
4-Methyl-2-Pentanone	-	50	-	NO-2.0	NO-6	NO
Methyl Chloride	-	5	50 ^(*)	NO	NO-14	NO
1,1,2-Trichloroethane	-	5	0.7 ^(*)	NO-0.8	NO-1300	NO-3.0
Toluene	-	5	50 ^(*)	NO	NO-2	NO-0.4
Total Xylenes	-	5	50 ^(*)	NO	NO-40	NO-0.6
Trans-1,2-Dichloroethane	-	5	50 ^(*)	NO	NO-830	NO-8
1,1,1-Trichloroethane	200	5	50 ^(*)	NO-0.2	NO-100	NO-0.6
Trichloroethane	5	5	10	NO-0.3	NO-260	NO-0.6
Vinyl Chloride	2	2	2	NO	NO-7	NO-4

(NO) Not detected.

(*) Guidance value.

(1) Applies to sum of trihalomethanes.

(-) Standard currently not available.

— Underlined compounds were found in concentrations exceeding the Federal or New York State Maximum Concentration Levels (MCLs) or Ambient Water Quality Criteria (AWQC).

TABLE 4.
CONCENTRATION RANGES OF SEMI VOLATILE ORGANICS
AND PESTICIDES IN GROUNDWATER BY AREA
Rounds 1 & 2 Combined

Compound	Safe Drinking Water Act MCL (ug/l)	NYS DOM MCL (ug/l)	NYS Ambient Water Quality Criteria - Class GA Groundwater (ug/l)	Upgradient Wells (ug/l)	Site Vicinity and Downgradient Wells (ug/l)	Landfill/ Off-Site Plume Wells (ug/l)
Semivolatiles						
Benzoic Acid	-	50	-	NO	NO-5	NO
Bis(2-ethylhexyl)phthalate	-	4200	4200	NO-88	NO-92	NO-27
<u>Chrysene</u>	-	50	0.002(*)	NO	NO	NO-3
<u>1,4-Dichlorobenzene</u>	75	5	4.7(1)	NO	NO	NO-15
1,2-Dichlorobenzene	-	5	4.7(1)	NO	NO	NO-3
Diethylphthalate	-	50	50(-)	NO	NO-2	NO-2
Di-n-butylphthalate	-	770	770	NO	NO-3	NO
Fluoranthene	-	50	0.002(*)	NO	NO	NO-6
Isophthalene	-	50	50(-)	NO	NO-4	NO
2-Methylnaphthalene	-	50	-	NO	NO-4	NO
<u>Naphthalene</u>	-	50	10(*)	NO	NO-51	NO-7
2-Nitrophenol	-	50	-	NO	NO-13	NO
4-Nitrophenol	-	50	-	NO	NO-6	NO
Pentachlorophenol	-	21	21	NO	NO-2	NO
Phenanthrene	-	50	50(*)	NO	NO	NO-4
<u>Phenol</u>	-	1	1	NO-13	NO-30	NO
Pyrene	-	50	50(*)	NO	NO	NO-5
Pesticides						
<u>Alpha-CHC</u>	-	NO	NO	NO	NO	NO-0.15
<u>4,4'-DDE</u>	-	NO	NO	NO	NO-0.11	NO
<u>Heptachlor</u>	-	NO	NO	NO	NO	NO-0.047

(NO) Not detected.

(*) Guidance value.

(1) Applies to sum of para (1,4) and ortho (1,2) isomers only.

(-) Standard currently not available.

— Underlined compounds were found in concentrations exceeding the Federal or New York State Maximum Concentration Levels (MCLs) or Ambient Water Quality Criteria (AWQC).

• compounds found above MCLs/AWQC in Landfill Plume wells only.

TABLE 4
CONCENTRATION RANGES OF TOTAL METALS
IN GROUNDWATER BY AREA
Rounds 1 & 2 Combined

Element	Safe Drinking Water Act MCL (ug/l)	NYS Ambient Water Quality Criteria - Class GA Groundwater (ug/l)	Upgradient Wells (ug/l)	Site Vicinity and Downgradient Wells (ug/l)	Landfill/Off-Site Plume Wells (ug/l)
Aluminum (Al)	-	-	ND-43,700	ND-50,800	ND-8,400
Antimony (Sb)	-	3(*)	ND	ND-82.2	ND-36.4
Arsenic (As)	50	25	ND-21.3	ND-29.7	ND-54.7
Barium (Ba)	1000	1000	46.2-305	ND-310	27.2-15.2
Beryllium (Be)	-	3(*)	ND-6.6	ND-10.1	ND-2.4
Cadmium (Cd)	10	10	ND-4.9	ND-10.1	ND-4.2
Calcium (Ca)	-	-	37,600-72,100	ND-95,300	2,110-66,600
Chromium (Cr)	50	50	ND-112	ND-159	ND-20.6
Cobalt (Co)	-	-	ND-45.8	ND-76.4	ND-15.3
Copper (Cu)	-	1000	ND-165	ND-214	ND-43.5
Iron (Fe)	-	300	204-90,700	ND-374,000	79.1-83,200
Lead (Pb)	50	25	ND-55.1	ND-464	ND-346
Magnesium (Mg)	-	35000(*)	6,910-15,800	838-16,100	8,580-32,000
Manganese (Mn)	-	300	218-549	12.6-2,900	80.2-3,130
Mercury (Hg)	2	2	ND	ND-2.4	ND-1
Nickel (Ni)	-	-	ND-86.7	ND-92.7	ND-29
Potassium (K)	-	-	10,500-28,200	604-21,300	924-13,5000
Selenium (Se)	10	20	ND-3.2	ND-7	ND
Sodium (Na)	-	-	9,900-148,000	ND-93,400	3,900-274,000
Thallium (Tl)	-	4(*)	ND-8.5	ND-17.3	ND
Vanadium (V)	-	-	ND-465	ND-595	ND-23.7
Zinc (Zn)	-	5000	30.2-650	ND-838	ND-140

(*) - Guidance value.
(ND) - Not detected.
(-) - None currently available.

TABLE 5

CLAREMONT POLYCHEMICAL SITE
AIR QUALITY SAMPLING (CHARCOAL) RESULTS FOR VOLATILE ORGANICS (PPB)¹

SAMPLE I.D.	CMS154	CMS193	CMS158	CMS190	CMS070	CMS156
LOCATION	Spill Area	Treatment Basins	Downwind	Upwind	Mainten- ence Room	Mainten- ence Room
vinyl chloride	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
1,1-dichloroethene	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
methylene chloride	1.2u	3.7u	2.6u	9.3u	4.8u	6.4u
acrylonitrile	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
chloroform	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
1,1,1-trichloroethane	0.7	0.6	0.6	0.7	0.2u	0.2
carbon tetrachloride	<0.1	<0.1	<0.1	0.1	<0.1	<0.1
benzene	0.6u	0.8u	0.5u	0.7u	0.2u	0.3u
toluene	1.8	2.4	1.7	2.1	1.6	1.5
1,2-dichloroethane	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
trichlorofluoromethane	3.0R	2.4R	2.4R	7.2R	7.6R	3.4R
1,1,2-trichloro-1,2,2-trifluoroethane	0.3NJ	0.3NJ	0.3NJ	0.3NJ	<0.1	<0.1NJ
trichloroethene	2.1NJ	2.1NJ	2.1NJ	1.0NJ	0.2NJ	0.3NJ
tetrachloroethene	4.6NJ	3.1NJ	2.6NJ	2.7NJ	0.8NJ	0.8NJ
ethylbenzene	0.5NJ	0.8NJ	0.4NJ	0.6NJ	0.4NJ	0.4NJ
m- & p-xylene	1.4NJ	2.3NJ	1.3NJ	1.8NJ	1.6NJ	1.2NJ
o-xylene	0.7NJ	1.0NJ	0.6NJ	0.9NJ	0.9NJ	0.5NJ
cyclohexanone	0.7NJ	0.5NJ	0.8NJ	0.9NJ	1.4NJ	0.6NJ
propylbenzene	0.1NJ	<0.1	<0.1	0.2NJ	0.1NJ	<0.1

J - estimated

N - tentative identification

R - rejected

U - non-detect due to presence in blank

2225K

TABLE 5
CLAREMONT POLYCHEMICAL SITE
ANALYTICAL RESULTS OF AIR SAMPLES - (TENAX) VOLATILE ORGANICS

SAMPLE I.D. LOCATION	Concentration (ppb)(1)					
	11 Spill Area	12 Treatment Basins	13 Downwind	14 Upwind	15 Maintenance Room	17 Maintenance Room
1,1-dichloroethene	BDL	BDL	BDL	BDL	BDL	BDL
1,1-dichloroethane	BDL	BDL	BDL	BDL	BDL	BDL
1,2-dichloroethene (total)	BDL	BDL	BDL	BDL	BDL	BDL
chloroform	0.0668J	BDL	0.0338J	0.0582J	BDL	0.0258J
1,2-dichloroethane	BDL	BDL	BDL	BDL	BDL	BDL
carbon tetrachloride	0.116J	0.112J	0.0941J	0.117J	BDL	BDL
bromodichloromethane	BDL	BDL	BDL	BDL	BDL	BDL
1,2-dichloropropane	BDL	BDL	BDL	BDL	BDL	BDL
cis-1,3 dichloropropene	BDL	BDL	BDL	BDL	BDL	BDL
trichloroethene	R	1.12Jb	1.14Jb	0.448Jb	U	0.161Jb
dibromochloromethane	BDL	BDL	BDL	BDL	BDL	BDL
1,1,2-trichloroethane	BDL	BDL	BDL	BDL	BDL	BDL
trans-1,3-dichloropropene	BDL	BDL	BDL	BDL	BDL	BDL
bromoform	BDL	BDL	BDL	BDL	BDL	BDL
2-hexanone	BDL	BDL	BDL	BDL	BDL	BDL
tetrachloroethene	3.42J	1.76J	1.56J	1.54J	0.184J	0.405J
1,1,2,2-tetrachloroethene	BDL	BDL	BDL	BDL	BDL	BDL
chlorobenzene	BDL	BDL	BDL	BDL	BDL	BDL
styrene	0.374J	0.243J	0.174J	0.261J	0.117J	0.295J

BDL - below detection limit

J - estimated

u - non-detect due to presence in blank

R - rejected due to presence in blank

1 - values (including BDL) qualified as estimates because sample holding time exceeded

2225K

TABLE 6

CLAREMONT POLYCHEMICAL SITE
ANALYTICAL RESULTS FROM WIPE SAMPLES IN THE PROCESS BUILDING - ORGANIC (ug/wipe)¹

Sample	CONCENTRATION											
	CPS WP09-1	CPS WP09-2	CPS WP08-3	CPS WP08-4	CPS WP07-5	CPS WP07-6	CPS WP06-7	CPS WP06-8	CPS WP06-9	CPS WP06-10	CPS WP05-11	CPS WP05-12
Location	Wall ND	Floor	Wall	Floor	Wall ND	Floor	Hood ND	Hood ND	Floor	Hood	Wall	Floor
BNA												
Benzoic Acid			5J									
Phenanthrene		2J										
Di-n-Butylphthalate		2J										
Fluoranthene		2J										
Pyrene		1J										
bis-(2-Eth. Hexyl)Phthalate		230	22	2400		1400			270	420	100	3000
Di-n-Octyl Phthalate						1500						

PESTICIDE/PCB

¹ Approximately 63 in² wiped per sample
 ND Not detected
 J - Estimated concentration

TABLE 6 (Cont'd.)

CLAREMONT POLYCHEMICAL SITE
ANALYTICAL RESULTS FROM WIPE SAMPLES IN THE PROCESS BUILDING - ORGANIC (ug/wipe)¹

Sample Location	CONCENTRATION									
	CPS WP04-13	CPS WP04-14	CPS WP02-15	CPS WP02-16	CPS WP02-17	CPS WP01-19	CPS WP01-20	CPS WP03-21	CPS WP03-22	CPS WP02-23
	Wall	Floor	Wall	Wall	Floor	Wall ND	Floor	Floor	Floor	Wall
BNA										
Phenol	17J						43J			
Benzoic Acid	59J							24J		
Di-n-Butylphthalate									75J	
bis(2-ethylhexyl)Phthalate	110	5200J	90J	110J	6100		340	4200	6600	72J
Di-n-Octyl Phthalate				1300	1300				1300	
PESTICIDE/PCB	Undetected									

¹ Approximately 63 in² wiped per sample

ND - Not detected

J - Estimated concentration

TABLE 6

CLAREMONT POLYCHEMICAL SITE
ANALYTICAL RESULTS FROM WIPE SAMPLES IN THE PROCESS BUILDING - INORGANIC (ug/wipe)¹

Sample	CONCENTRATION													
	CPS WP09-1	CPS WP09-2	CPS WP0-3	CPS WP0-4	CPS WP07-5	CPS WP07-6	CPS WP06-7	CPS WP06-8	CPS WP06-9	CPS WP06-10	CPS WP05-11	CPS WP05-12	CPS WP04-13	CPS WP04-14
Location	Wall	Floor	Wall	Floor	Wall	Floor	Hood	Hood	Floor	Hood	Wall	Floor	Wall	Floor
Aluminum	114.0	2030.0	341.0	8900.0J	1100.0J		224.0	1080.0	42,200.0	75.9	327.0	3280.0	117.0	5210.0
Antimony		24.1J		59.6	35.8J		19.3J		59.4		41.0	183.0	12.0J	182.0
Arsenic	.98	4.5		8.1	7.0				8.5			7.3		1.68
Barium	79.0J	549.0J	2300.0J	1100.0	7.38		11.08	39.68J	747.0J	5.58	104.0J	807.0J	28.58J	4020.0J
Beryllium				0.688					0.74J					
Cadmium		117.0	406.0	590.0	5.0		4.0	2.1J	186.0	1.5J	21.9	585.0	4.6	1070.0
Calcium	2500.0	7340.0	4900.0	18,300.0				3290.0	16,200.0		5130.0	9380.0		4990.0
Chromium		172.0	15.3	566.0	4.6		9.7	25.2	486.01	20.4	534.0	5940.0	22.5	1570.0
Cobalt				11.1					11.6			10.9		6.68
Copper	28.6	1640.0	519.0	1040.0	1290		438.0	1760.0	1960.0	201.0	253.0	3710.0	180.0	1570.0
Iron		9280.0	1010.0	65,600.0	395.0		182.0	900.0	135,000		611.0	67,400.0	194.0	20,900.0
Lead	4.2J	1680.0	99.6	3030.0J	186.0J		77.3	121.0	1810.0	99.1	2410.0	29,900.0	112.0	6100.0
Magnesium	218.08	1600.0	293.08	4130.0J	216.08		133.08	764.08	2970.0	191.08	246.08	1200.0	188.0	1860.0
Manganese	4.4J	95.2	15.0	443.0J	9.9J		3.08	11.3	709.0	2.48	8.2J	432.0	4.5J	140.0
Mercury							0.62		0.68					
Nickel		15.4J		72.4	6.78				91.3			49.0		22.0J
Potassium	271.08	1290.0	474.08	3000.0	656.08		248.08	384.08	2630.0	203.08	294.08	1340.0	338.08	3690.0
Selenium			0.688											
Silver														
Sodium				38,400.0										
Thallium														
Vanadium		13.0		28.4					21.6					8.08
Zinc		929.0	816.0	38,400.0	17,700.0		3610.0	719.0	23,000.0	1230.0	217.0	1430.0		937.0

TABLE 6 (Cont'd)

CLAREMONT POLYCHEMICAL SITE
ANALYTICAL RESULTS FROM WIPE SAMPLES IN THE PROCESS BUILDING - INORGANIC (ug/wipe)¹

Sample	CONCENTRATION							
	CPS WP02-15	CPS WP02-16	CPS WP02-17	CPS WP01-19	CPS WP01-20	CPS WP03-21	CPS WP03-22	CPS WP03-23
Location	Wall	Wall	Floor	Wall	Floor	Floor	Floor	Wall
Aluminum	77.6	51.8	6380.0	294.0	1840.0	1740.0	1590.0	911.0
Antimony	15.0J	10.2	114.0			25.7J	28.1J	23.7J
Arsenic			4.3		2.8J	13.2J	4.0	2.3
Barium	87.1	45.7J	1120.0J	71.1J	86.4J	339.0J	275.0J	147.0J
Beryllium			0.83B					
Cadmium	13.0	5.4	397.0	3.1	9.4	82.2	87.3	5.6
Calcium			13,000.0	3290.0	8970.0	4670.0	4120.0	5650.0
Chromium	30.8	18.6	1650.0	29.4	123.0	264.0	250.0	73.6
Cobalt			7.5B					
Copper	54.2	33.6	6030.0	133.0	154.0	1100.0	1140.0	1500.0
Iron	270.0	167.0	32,100.0	440.0	4190.0	17,900.0	15,200.0	1370.0
Lead	368.0J	203.0	12,400.0	162.0	523.0	1220.0	1200.0	357.0
Magnesium	427.0B	387.0B	4030.0	300.0B	947.0B	740.0B	644.0B	903.0B
Manganese	2.3B	2.0B	242.0	8.4J	28.0	92.7	86.3	17.3
Mercury		0.55	1.11					
Nickel		4.6	23.9J			8.0B	8.0B	
Potassium	225.0B	202.0B	27,300.0	294.0B	2560.0	905.0B	564.0B	520.0B
Selenium								
Silver								
Sodium				149,000				
Thallium								
Vanadium			19.0		3.2B	5.9B	7.2B	3.4B
Zinc			4420.0	107.0	138.0	1270.0	1280.0	454.0

¹ Approximately 135 in² wiped per sample.

B - The concentration listed is below the analysis required detection limit but above the instrument detection limit.

J - Estimated concentration.

Table 7
Summary of Indicator Chemicals in
Sampled Matrices at Claremont Polychemical Site

	Air	Building Dust	Soil	Groundwater
o Antimony	--	X	X	X
o Arsenic	--	X	--	X
o Barium	--	X	--	X
o Benzene	--	--	--	X
o Benzoic Acid	--	--	X	X
o Beryllium	--	X	--	X
o Bis(2-ethylhexyl)phthalate	--	X	X	X
o Butyl benzyl phthalate	--	--	X	--
o Cadmium	--	X	X	X
o Chlorobenzene	--	--	--	X
o Chloroethane ^a	--	--	--	X
o Chloroform	--	--	--	X
o Chromium	--	X	--	X
o Cobalt(a)	--	X	--	--
o Copper	--	X	X	X
o 1,2-Dichlorobenzene(a)	--	--	--	X
o 1,4-Dichlorobenzene(a)	--	--	--	X
o 1,1-Dichloroethane	--	--	--	X
o 1,1-Dichloroethene	--	--	--	X
o 1,2-Dichloroethane	--	--	--	X
c Diethylphthalate	--	--	--	X
o Di-n-butylphthalate	--	--	X	--
o Di-n-octyl-phthalate(a)	--	X	--	--
o Ethylbenzene	--	--	--	X
c Iron	--	X	--	X
o Isophorone	--	--	--	X
o Lead	--	X	X	X
o Manganese	--	X	--	X
o Mercury	--	X	--	X
o Nickel	--	X	--	X
o PAHs - Naphthalene	--	--	X	X
- Benzo(a)pyrene	--	--	X	X
o Pentachlorophenol	--	--	X	X
o Pesticides - 4,4'-DDT	--	--	X	--
4,4'-DDD	--	--	X	--
4,4'-DDE(a)	--	--	X	--
Alpha-BHC	--	--	--	X
o Phenol	--	--	--	X
c Selenium	--	--	X	--
c Tetrachloroethene	X	--	X	X
o Thallium	--	--	--	X
o Toluene	--	--	X	X
o Trans-1,2-Dichloroethene(a)	--	--	X	X
c Trichloroethene	X	--	X	X
o Vanadium	--	X	--	X
o Zinc	--	X	--	X

X Selected chemical of potential concern

-- Not selected as a chemical of potential concern

(a) No Toxicity data

Table 8
CLAREMONT POLYCHEMICAL SITE
SUMMARY OF EXPOSURE PATHWAYS UNDER CURRENT AND FUTURE LAND USE

<u>Exposure Medium/ Scenario</u>	<u>Exposure Pathway</u>	<u>Potentially Exposed Population</u>
1. <u>Present Land Use</u>		
Air	Inhalation of Volatiles	Residents, workers, students
Soil	Inhalation of Fugitive Dust	Residents, workers, students
Groundwater	Incidental Ingestion	Residents, workers, students
2. <u>Future Land Use</u>		
A. <u>On-Site</u>		
Air	Inhalation of Volatiles	Residents, construction workers
Building	Inhalation of dust	Workers inside building
Soil	Inhalation of Fugitive Dust Dermal contact Ingestion	Residents, construction workers Residents, construction workers Residents, construction workers
Groundwater	Inhalation of Volatiles while showering Dermal contact while showering Ingestion	Residents
B. <u>Off-Site</u>		
Air	Inhalation of Volatiles	Residents, workers
Soil	Inhalation of Fugitive Dust	Residents, workers
Groundwater	Inhalation of Volatiles while showering Dermal contact while showering Ingestion	Residents Residents

Table 9
Toxicity Data for Non-Carcinogenic Effects
Dose Response Evaluation (a)

Chemical Name	NONCARCINOGENS : Reference Doses	
	Oral RfD (mg/kg-day)	Inhalation RfD (mg/kg-day)
Volatiles:		
Benzene	-	-
Chlorobenzene	3.00E-02	5.00E-03
Chloroform	1.00E-02	ND
1,1-Dichloroethane	1.00E-01	1.00E-01
1,2-Dichloroethane	-	-
1,1-Dichloroethene	9.00E-03	ND
Ethylbenzene	1.00E-01	ND
Toluene	3.00E-01	1.00E+00
Tetrachloroethane	1.00E-02	ND
1,1,1-Trichloroethane	9.00E-02	3.00E-01
Trichloroethene	-	-
Vinyl Chloride	-	-
Xylenes	2.00E+00	4.00E-01
Semivolatiles:		
Benzoic Acid	4.00E+00	ND
Isophorane	2.00E-01	ND
Pentachlorophenol	3.00E-02	ND
Phenol	6.00E-01	ND
Benzo(a)pyrene	-	-
Naphthalene	4.00E-01	ND
Bis(2-ethylhexyl)phthalate	2.00E-02	ND
Butyl benzyl phthalate	2.00E-01	ND
Di-n-butylphthalate	1.00E-01	ND
Diethylphthalate	8.00E-01	ND
Pesticides:		
Alpha BHC	8.00E-04	ND
4,4'-DDT	5.00E-04	ND
Inorganics:		
Antimony	4.00E-04	ND
Arsenic	1.00E-03	-
Barium	5.00E-02	1.00E-04
Beryllium	5.00E-03	ND
Cadmium	1E-03 (food)	ND
	5E-04 (water)	ND
Chromium (VI)	5.00E-03	ND
Copper (a)*	3.70E-02	1.00E-02
Lead***	1.43E-04	ND
Manganese	2.00E-01	3.00E-04
Mercury	3.00E-04	ND
Nickel	2.00E-02	ND
Selenium	3.00E-03	1.00E-03
Thallium	7.00E-05	ND
Vanadium	7.00E-03	ND
Zinc	2.00E-01	ND

(a) Health Effects Assessment Summary Tables - Second and Third Quarters. USEPA, 1989.

(a)* Calculated from the current drinking water standard of 1.3 mg/l assuming an ingestion of 2.0 l/day for a 70 kg person.

***: A tentative value was computed by the USEPA using the proposed National Drinking Water Standard of 5 ug/l (USEPA, 1988) and a reference drinking rate of 2.0 l/day (USEPA, 1986b).

Table i0
Claremont Polychemical Site
Summary of Human Non-cancer Risk Estimates

Exposure Pathway	Hazard Index for Noncarcinogenic Effects		
	Average Case	Maximum Plausible Case	Predominant Chemicals
<u>Current Land Use Conditions</u>			
Inhalation of air	0.8	3.24	PCE
Inhalation of soil	—	—	—
Ingestion of Groundwater	0.9	N/A	—
Total	1.7	4.1*	
<u>Future Off-Site Land Use Conditions</u>			
Inhalation of air	0.4	1.62	PCE
Inhalation of Fugitive Dust	—	—	—
Ingestion of groundwater	8.77	N/A	Pb
Dermal adsorption of groundwater	—	—	—
Inhalation of Groundwater Volatiles	0.4	N/A	—
Total	10	11*	
<u>Future On-Site Land Use Conditions</u>			
Inhalation of air	0.8	3.24	PCE
Ingestion of soil	0.15	0.50	—
Dermal adsorption of soil	0.01	0.16	—
Inhalation of fugitive Dust	—	—	—
Ingestion of groundwater	15.2	N/A	Sb, TL, PCE
Dermal adsorption of groundwater	—	0.01	—
Inhalation of Groundwater Volatiles	2.83	N/A	PCE
Total	19	23*	
<u>Future Building Use</u>			
Inhalation of resuspended building dust	1.11E+02	2.37E+03	Barium, iron, manganese, cadmium, copper, BEHP

(—): No chemicals with HI above 1 and/or total risk or HI is below target level
 N/A not analyzed
 * for the N/A values, the average case was used

Table 11
Toxicity Data For Carcinogenic Effects
Dose Response Evaluation (a)

Chemical Name	Carcinogens: Cancer Potency Factors			
	Oral CPF (mg/kg-day) ⁻¹	Weight of Evidence	Inhalation CPF (mg/kg-day) ⁻¹	Weight of Evidence
Volatiles:				
Benzene	2.90E-02	A	2.90E-02	A
Chlorobenzene	-	-	-	-
Chloroform	6.10E-03	B2	8.10E-02	B2
1,1-Dichloroethane	9.10E-02	B2	ND	ND
1,2-Dichloroethane	9.10E-02	B2	9.10E-02	B2
1,1-Dichloroethene	6.00E-01	C	1.20E+00	C
Ethylbenzene	-	-	-	-
Toluene	-	-	-	-
Tetrachloroethane	5.10E-02	B2	3.30E-03	B2
1,1,1-Trichloroethane	-	-	-	-
Trichloroethene	1.10E-02	B2	1.30E-02	B2
Vinyl Chloride	2.30E+00	A	2.95E-01	A
Semivolatiles:				
Benzoic Acid	-	-	-	-
Isophorone	6.10E-03	C	ND	C
Pentachlorophenol	-	D	-	D
Phenol	-	-	-	-
Benzo(a)pyrene (b)	1.15E+01	B2	6.10E+00	B2
Naphthalene	-	-	-	-
Bis(2-ethylhexyl)phthalate	1.40E-02	B2	ND	B2
Butyl benzyl phthalate	ND	C	ND	-
Di-n-butylphthalate	ND	D	ND	D
Diethylphthalate	ND	D	ND	D
Pesticides:				
Alpha BHC	1.70E+00	B2	1.70E+00	B2
4,4'-DDT	3.40E-01	B2	3.40E-01	B2
Inorganics:				
Antimony	-	-	-	-
Arsenic	1.50E+00 (b)	A	5.00E-01	A
Barium	-	-	-	-
Beryllium	ND	B2	8.40E+00	B2
Cadmium	ND	-	6.10E+00	B1
Chromium (VI)	ND	-	4.10E-01	A
Copper	-	-	-	-
Lead	ND	B2	ND	B2
Manganese	-	-	-	-
Mercury	-	-	-	-
Nickel (c)	ND	-	1.70E+00	A
Selenium	-	-	-	-
Thallium	-	-	-	-
Vanadium	-	-	-	-
Zinc	-	-	-	-

EPA Weight of Evidence Classifications are as follows:

Group A - Human Carcinogen. Sufficient evidence from epidemiologic studies to support a causal association between exposure and cancer.

Group B1 - Probable Human Carcinogen. Limited evidence of carcinogenicity in humans from epidemiological studies.

Group B2 - Probable Human Carcinogen. Sufficient evidence of carcinogenicity in animals. Inadequate evidence of carcinogenicity in humans.

Group C - Possible Human Carcinogen. Limited evidence of carcinogenicity in animals.

Group D - Not Classified. Inadequate evidence of carcinogenicity in animals.

(a) See: Effect Assessment Summary Tables, EPA, 1989.

(b) Calculated from the current drinking water standard of 1.3 mg/l assuming an ingestion of 2.0 l/day for a 70 kg person.

(c) Integrated Risk Information System, 1987.

(c) The CPF represents the nickel subsulfide form of the chemical.

Table 12

**Claremont Polychemical Site
Summary of Cancer Risk Estimates**

Exposure Pathway	Excess Lifetime Cancer Risk		
	Average Case	Maximum Plausible Case	Predominant Chemicals
<u>Current Land Use Conditions</u>			
Inhalation of air	1.84E-06	1.38E-06	TCE, PCE
Inhalation of soil	1.05E-09	9.48E-08	—
Ingestion of Groundwater	4.23E-08	1.49E-07	—
Total	1.88E-06	1.40E-05	
<u>Future Off-Site Land Use Conditions</u>			
Inhalation of air	1.84E-06	1.38E-05	TCE, PCE
Inhalation of Fugitive Dust	2.07E-10	7.07E-09	—
Ingestion of groundwater	9.59E-06	3.20E-05	PCE, BEHP
Dermal adsorption of groundwater	4.57E-09	2.24E-08	—
Inhalation of Groundwater Volatiles	1.11E-06	3.70E-06	PCE
Total	1.20E-05	5.0E-05	
<u>Future On-Site Land Use Conditions</u>			
Inhalation of air	3.93E-06	5.83E-05	TCE, PCE
Ingestion of soil	1.73E-07	1.20E-06	PAH
Dermal adsorption of soil	1.23E-08	4.02E-07	—
Inhalation of Fugitive Dust	2.07E-10	7.07E-09	—
Ingestion of groundwater	1.36E-04	4.53E-04	As, PCE, Vinyl Chloride, 1,1-DCE, TCE, 1,1-DCA
Dermal adsorption of groundwater	7.34E-07	3.80E-06	Benzene
Inhalation of Groundwater Volatiles	4.36E-05	1.45E-04	1,1-DCE, Vinylchloride PCE, TCE, 1,1-DCA Benzene, 1,2,-DCA, Chloroform
Total	1.84E-04	6.51E-04	
<u>Future Building Use</u>			
Inhalation of resuspended building dust	2.37E-04	5.09E-03	Cadmium, arsenic, nickel, BEHP, beryllium

(—): No chemicals with cancer risk above 1×10^{-6}
 N.A. not analyzed
 * for the N.A. values, the average case was used

Table 13. List of Applicable or Relevant and Appropriate Requirements (ARARs) for the Selected Remedy.

SOILS

Regulatory Level

Description

Federal

National Ambient Air Quality Standards for Hazardous Air Pollutants (NAAQS)
40 CFR 52

RCRA - Land Disposal Restrictions (40 CFR 268)

RCRA - Standards Applicable to Transport of Hazardous Waste (CFR 263.11, 263.20-21 and 263.30-31)

RCRA - Standards for Owners/Operators of Permitted Hazardous Waste Facilities (40 CFR 264.10-264.18)

RCRA - Preparedness and Prevention (40 CFR 264.10-264.18)

RCRA - Contingency Plan and Emergency Procedures (40 CFR 264.50-264.55)

DOT - Rules for Transportation of Hazardous Materials (49 CFR Parts 107, 171.1-172.558)

State

New York Hazardous Waste Manifest System Rules (6 NYCRR 372)

New York Hazardous Waste Treatment Storage and Disposal Facility Permitting Requirements (6 NYCRR 370 and 373)

GROUNDWATER

Federal

SDWA Maximum Contaminant Levels (MCLs)

State

Groundwater Quality Regulations (6 NYCRR Part 703.5)

Drinking Water Standards (10 NYCRR Part 5)

OTHERS

OSHA - Safety and Health Standards (29 CFR 1926)

OSHA - Record Keeping, Reporting and Related Regulations (29 CFR 1904)

APPENDIX C. ADMINISTRATIVE RECORD INDEX

09/27/90

Index Document Number Order
CLAREMONT POLYCHEMICAL Documents

Page: 1

Document Number: CLR-001-0001 To 0151

Date: 07/01/90

Title: Draft Final Remedial Investigation Report: Claremont Polychemical Site, Volume 1 of 6: Sections
1, 2 and 3

Type: PLAN

Condition: DRAFT

Author: Nivargikar, Rao: Ebasco Services

Recipient: none: US EPA

Document Number: CLR-001-0152 To 0356

Date: 07/01/90

Title: Draft Final Remedial Investigation Report Claremont Polychemical Site, Volume 2 of 6: Sections
4 and 5

Type: PLAN

Condition: DRAFT

Author: none: Ebasco Services

Recipient: none: US EPA

Document Number: CLR-001-0357 To 0557

Date: 07/01/90

Title: Draft Final Remedial Investigation Report, Claremont Polychemical Site, Volume 3 of 6: Sections
6, 7 and References

Type: PLAN

Condition: DRAFT

Author: none: Ebasco Services

Recipient: none: US EPA

Document Number: CLR-001-0558 To 0845

Date: 07/01/90

Title: Draft Final Remedial Investigation Report, Claremont Polychemical Site, Volume 4 of 6: Appendices
A-H

Type: PLAN

Condition: DRAFT

Author: none: Ebasco Services

Recipient: none: US EPA

09/27/90

Index Document Number Order
CLAREMONT POLYCHEMICAL Documents

Page: 2

Document Number: CLR-001-0846 To 1089

Date: 07/01/90

Title: Draft Final Remedial Investigation Report, Claremont Polychemical Site, Volume 5 of 6: Appendices
I-L

Type: PLAN
Condition: DRAFT
Author: none: Ebasco Services
Recipient: none: US EPA

Document Number: CLR-001-1090 To 1460

Date: 07/01/90

Title: Draft Final Remedial Investigation Report, Claremont Polychemical Site, Volume 6 of 6: Chemical
Results Appendices

Type: PLAN
Condition: DRAFT
Author: none: Ebasco Services
Recipient: none: US EPA

Document Number: CLR-001-1461 To 1914

Date: 07/01/90

Title: Draft Final Feasibility Study Report - Claremont Polychemical Site

Type: PLAN
Condition: DRAFT
Author: Nivargitar, Rao: Ebasco Services
Recipient: none: US EPA

Document Number: CLR-001-1915 To 1929

Date: 08/01/90

Title: Superfund Proposed Plan - Claremont Polychemical Site

Type: PLAN
Author: none: US EPA
Recipient: none: none

09/27/90

Index Document Number Order
CLAREMONT POLYCHEMICAL Documents

Page: 3

Document Number: CLR-001-1930 To 1931

Date: 08/29/90

Title: (Letter advising of concurrence with proposed remedial action alternatives for Claremont Polychemical site)

Type: CORRESPONDENCE

Author: O'Toole, Michael J Jr: NY Dept of Environmental Conservation

Recipient: Caspe, Richard L: US EPA

Document Number: CLR-001-1932 To 1995

Date: 09/22/89

Title: Declaration for the Record of Decision and Decision Summary - Claremont Polychemical Site Operable Unit II

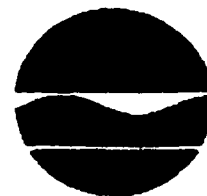
Type: LEGAL DOCUMENT

Author: Muszynski, William J: US EPA

Recipient: none: none

APPENDIX D. NYSDEC LETTER OF CONCURRENCE

New York State Department of Environmental Conservation
80 Wolf Road, Albany, New York 12233-7010



Thomas C. Jorling
Commissioner

Mr. Richard L. Caspe, P.E.
Director
Emergency & Remedial Response Division
U.S. Environmental Protection Agency
Region II
26 Federal Plaza
New York, NY 10278

SEP 24 1990

Dear Mr. Caspe:

Re: Claremont Polychemical Site - ID. No. 130015
Old Bethpage, Nassau County, New York

The New York State Department of Environmental Conservation (NYSDEC) has reviewed the draft Operable Unit One Declaration for the Record of Decision (ROD) for the above-referenced site. The NYSDEC concurs with the selected remedies which include:

1. Alternative SC-4, Contaminated Soils - Excavation of approximately 1600 cubic yards of contaminated soil, on-site Low Temperature Enhanced Volatilization and on-site redeposition.
2. Alternative GW-3B, Groundwater - Extraction of 1.0 mgd of contaminated groundwater, followed by treatment (metal precipitation, air stripping and carbon adsorption) and reinjection of the treated water into the aquifer.
3. Alternative BD-2 - Building decontamination and off-site treatment/disposal of collected dust, asbestos insulation, and contaminated water from the floor drains and condensers.
4. Alternative T-2, Underground Storage Tanks: Removal and Off-Site Treatment/Disposal - This alternative includes excavation of overburden soil, pumping of the tank contents, tank cleaning, removal of tanks and appurtenant equipment, off-site disposal/treatment of tanks, equipment and liquid waste, and backfilling with clean soil.

If you have any questions, please call Mr. Kamal Gupta, of my staff, at (518) 457-3976.

Sincerely,

Edward O. Sullivan
Deputy Commissioner

cc: C. Ramos, USEPA, Region II
R. Tramontano, NYSDOH

APPENDIX E. RESPONSIVENESS SUMMARY

RESPONSIVENESS SUMMARY

**Claremont Polychemical Site
Old Bethpage, Nassau County
New York**

The U.S. Environmental Protection Agency (EPA) held a public comment period from August 25, 1990 through September 25, 1990 to receive comments from interested parties on the final Remedial Investigation and Feasibility Study (RI/FS) reports and Proposed Plan for the Claremont Polychemical Superfund Site (Site).

A public participation meeting was conducted by EPA on September 5, 1990 at the Old Bethpage Village Restoration, Old Bethpage, New York to discuss the remedial alternatives, to present EPA's preferred alternative for the remediation of the site, and to provide an opportunity for the interested parties to present oral comments and questions to EPA.

This responsiveness summary provides a synopsis of citizen's comments and concerns about the Site as raised during the public comment period, and EPA's responses to those comments. All comments summarized in this document were factored into EPA's final decision for selection of the remedial activities for cleanup of the Claremont Polychemical Site.

This responsiveness summary is divided into the following sections:

- I. Responsiveness Summary Overview. This section briefly describes the background of the Claremont Polychemical Site and outlines the proposed alternatives.
- II. Background on Community Involvement and Concerns. This section provides a brief history of community interests and concerns regarding the Claremont Polychemical Site.
- III. Summary of Major Questions and Comments Received During the Public Comment Period and EPA's Responses. This section summarizes comments submitted to EPA at the public meeting and during the comment period and provides EPA's responses to these comments.
- IV. Appendices. This section includes a copy of the agenda for the public meeting (Appendix A), Proposed Plan (Appendix B), public meeting sign-in sheet (Appendix C), and the overhead transparencies used at the public meeting (Appendix D).

I. RESPONSIVENESS SUMMARY OVERVIEW

Site Background

The Claremont Polychemical Site is an abandoned production facility located in central Long Island, in the community of Old Bethpage, Town of Oyster Bay, Nassau County, New York. The facility is situated in an area comprised of light industrial, commercial and institutional properties (Oyster Bay Solid Waste Disposal Complex, SUNY Agricultural and Technical College at Farmingdale, and Bethpage State Park). The Suffolk County line is approximately 800 feet east of the Site.

In 1985, Old Bethpage had a population of 5,881 persons and Oyster Bay had a population of 305,750 persons, according to the Current Population Report (U.S. Bureau of Census, 1987). The closest residences are approximately half a mile away on the west side of the landfill. The closest public supply well is located 3,500 feet northwest of the Site.

The Site occupies approximately 9.5 acres on which a 35,000 square foot, one story, concrete building is located. Other features include: treatment basins, aboveground tanks, underground tanks, leaching basins, dry wells, and water supply wells.

From 1968 until its closure in 1980, Claremont Polychemical manufactured inks and pigments for plastics, coated metallic flakes, and vinyl stabilizers. The principal wastes generated were organic solvents, resins, and wash wastes (mineral spirits).

Concern for contamination was linked to a discovery in 1979 by the Nassau County Department of Health (NCDOH) of 2,000 to 3,000 drums scattered throughout the Site, some uncovered and others leaking. By September 1980 most of the drums were sorted and either removed from the Site or reused in the plant. Some of the material was burned in the plant's boiler. NCDOH inspectors noted at the time that an area east of the building (spill area) was contaminated with organic solvents as a result of accidental and/or incidental spills and discharges. A subsequent removal action by the property owners, in 1980, excavated the upper ten feet of a seventy-five foot by seventy-five foot area. The excavated material was placed on a plastic liner. Over the years, this liner degraded and no longer is an impermeable layer. Groundwater samples from a monitoring well installed at the time indicated the presence of groundwater contamination directly under the Site.

Claremont Polychemical and its affiliated companies entered into receivership in 1980. In 1983, Woodward-Clyde Consultants, under the direction of the New York State Department of Environmental Conservation, conducted a preliminary investigation of the Site.

In 1984, Velzy Associates conducted a limited study of the Site for the property owners. Additional work was performed by C.A. Rich Consultants. For the last four to five years two tenant businesses have been operating at the Site.

The Claremont Polychemical Site was first proposed for inclusion on the National Priorities List (NPL) in October 1984 and received a final listing status in June 1986. On December 4, 1987, EPA issued a special notice letter to Mr. Walter Neitlich (Claremont Polychemical Officer) requesting a good faith offer to undertake or finance the remedial investigation and feasibility study. No response was received from Mr. Neitlich or from the company. In March 1988 EPA obligated funds and started a comprehensive RI/FS for the first operable unit.

A preliminary evaluation by EPA in July 1988 revealed the presence of hazardous waste held in containers (e.g. drums) and other holding units (treatment basins, aboveground tanks, and a sump). In September 1988, EPA performed work consisting of the overpacking and/or stabilization of deteriorated containers and holding units. A second operable unit RI/FS (OU-II) dealing with the ultimate disposal of the above mentioned hazardous wastes was completed by EPA in July 1989. The Record of Decision for OU-II was issued in September 1989. The selected remedy is currently being implemented and consists of compatibility testing, bulking/consolidation, and treatment/disposal of the wastes at off-site, EPA-approved, treatment facilities.

Summary of Remedial Alternatives

The remedial alternatives considered for the Claremont Polychemical Site are described in the RI/FS and Proposed Plan for this operable unit (referred to as operable unit one). Those alternatives considered are detailed below:

Remedial Alternatives for Contaminated Soils (SC)

- o SC-1 No Further Action
- o SC-3 Excavation/Off-Site Incineration/Backfill with Clean Soil
- o SC-4 Excavation/Low Temperature Enhanced Volatilization/On-Site Redeposition
- o SC-5 In-Situ Vacuum Extraction

Remedial Alternatives for Contaminated Groundwater (GW)

- o GW-1 No Further Action
- o GW-2 Pumping/Air Stripping/Reinjection; Site Boundary (0.2 mgd)
- o GW-3A Pumping/Air Stripping/Reinjection; Leading Edge of Plume (1.9 mgd)

- o GW-3B Pumping/Air Stripping/Reinjection; Site Boundary and Downgradient (1.0 mgd)
- o GW-5A Pumping/UV-Chemical Oxidation/Reinjection; Leading Edge of Plume (1.9 mgd)
- o GW-5B Pumping/UV-Chemical Oxidation/Reinjection; Site Boundary and Downgradient (1.0 mgd)

Remedial Alternatives for Building (BD)

- o BD-1 No Further Action
- o BD-2 Building Decontamination/Waste Treatment and Disposal

Remedial Alternatives for Underground Storage Tanks (T)

- o T-1 No Further Action
- o T-2 Removal and Off-Site Disposal

EPA, with concurrence from the New York State Department of Environmental Conservation, chose a remedy which addresses the principal threats posed by the Site through a combination of source control alternatives - treatment of contaminated soils (SC-4) and tank removal and treatment (T-2), with active restoration of the groundwater (GW-3B), and building decontamination (BD-2). Based on the current information, these alternatives provide the best protection of human health and the environment.

II. BACKGROUND OF COMMUNITY INVOLVEMENT

Community interest in the Claremont Polychemical Site has been moderate throughout the RI/FS process and removal actions. Locally, the community has been active at public meetings related to various environmental problems associated with the Old Bethpage Landfill Site (OBL), Liberty Industrial Finishing Site, and the Nassau County Fire Service Academy. Several remedial activities are currently being conducted at the landfill, including extraction and treatment of groundwater contamination. The community has been aware of the Claremont Polychemical Site through newspaper articles, fact sheets, press releases, public notices, and public information meetings. Organized groups include the Citizens for Pure Water in South Farmingdale.

The major concern expressed by the community is migration of contaminants through groundwater. Local officials and the public in general have focused their concern on the potential for groundwater contamination and the impact on the drinking water supply wells located in the area.

III. SUMMARY OF MAJOR QUESTIONS AND COMMENTS RECEIVED DURING THE PUBLIC COMMENT PERIOD AND EPA'S RESPONSES

Comments raised during the public comment period for the Claremont Polychemical Site are summarized below.

COMMENT: Local officials inquired about whether or not EPA foresees any problems reinjecting the volume of groundwater to be treated as part of the groundwater remedy.

RESPONSE: EPA does not foresee any technical problems related to the reinjection of the treated groundwater into the aquifer. Our current hydrogeological model indicates that the aquifer should be able to assimilate this volume of water (1.0 million gallons per day). Construction and operation of the proposed groundwater reinjection wells is technically feasible at the Site. Normal potential problems such as clogging of the well screens due to suspended matter will be taken into account in the facility design.

COMMENT: A resident asked whether a risk assessment has been prepared which calculates the overall risk to the population exposed to contaminated groundwater, not only from the Claremont Polychemical Site, but from the combination of all Superfund sites in the vicinity.

RESPONSE: The risk assessment developed by EPA for the Claremont site addresses potential risk to human health and the environment from exposure to the Claremont Polychemical Site-related contamination only. Calculation of a "global or regional" risk figure would be difficult to accomplish since relationships between sources and exposed population would need to be determined for a variety of sources. However, due to the proximity of Claremont Polychemical with the Old Bethpage Landfill (OBL), and the potential for overlapping plumes, the risk calculated by EPA for exposure to groundwater at Claremont Polychemical may be influenced by contamination from the Landfill. Remediation of the Claremont Polychemical contaminant plume takes into consideration the potential impact of remedial activities taking place at OBL (i.e., groundwater extraction and treatment) in order to restore the aquifer to its best potential use.

COMMENT: A resident asked whether the remedial action taken by the company's owners in 1980 (i.e., excavation of soils and placement on plastic liner), and the use of liners in general, constitutes a good remedial action.

RESPONSE: It is difficult to assess the effectiveness of the 1980 action, since air and groundwater monitoring was not conducted concurrently with the action. Although liners are effective in reducing the potential for soil contaminants to

leach into the groundwater, they do not control the spread of leachate unless a collection system is in place. They also allow for the volatilization of contaminants into the air phase without treatment. Such releases are generally not acceptable to EPA or New York State. Generally speaking, liners without proper controls are not standard EPA response techniques.

COMMENT: Concern was expressed about other sources of groundwater contamination (e.g., the high number of Superfund sites in the area), and how all these affect the groundwater remediation.

RESPONSE: When EPA takes action at superfund sites, it takes into account potential upgradient or off-site contributions to the site groundwater contamination.

In other cases, EPA selected a remedy to address site contamination which is followed by a second operable unit to address remediation of an upgradient source, if one has been identified. If a source has not been identified, EPA may conduct a second operable unit investigation to assist in the identification of an off-site source.

When EPA takes action at Superfund sites, it takes into account potential upgradient or off-site contributions to the site groundwater contamination. In the case of the Claremont Polychemical Site, a great amount of communication and coordination has taken place between EPA and the Town of Oyster Bay (which is in charge of remedial activities at OBL). The groundwater remedy selected at Claremont Polychemical foresees a close coordination between the remedial activities taking place at both the OBL and Claremont Polychemical Sites.

APPENDIX A. PUBLIC MEETING AGENDA



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

**REGION II
26 FEDERAL PLAZA
NEW YORK, NEW YORK 10278**

AGENDA

**Public Meeting
Claremont Polychemical Superfund Site
Old Bethpage Village Restoration
Old Bethpage, New York**

**September 5, 1990
7:00 P.M.**

I. Welcome & Introduction

**Cecilia Echols
Community Relations
Coordinator
U.S. EPA, Region 2**

II. Overview of Superfund

**Douglas Garbarini
Chief, Eastern New York &
Caribbean Remedial Action
Section
U.S. EPA, Region 2**

**III. Remedial Investigation/
Feasibility Study and
Preferred Alternative**

**Carlos R. Ramos
Remedial Project Manager
Claremont Polychemical
Superfund Site
U.S. EPA, Region 2**

VI. Questions and Answers

V. Closing

APPENDIX B. PROPOSED PLAN

Superfund Proposed Plan

Claremont Polychemical Site Old Bethpage, Nassau County, New York

**EPA
Region 2**

August 1990

ANNOUNCEMENT OF PROPOSED PLAN

The Proposed Plan describes the remedial alternatives considered for the Claremont Polychemical Superfund site and identifies the preferred remedial alternative with the rationale for this preference. The Proposed Plan was developed by the U.S. Environmental Protection Agency (EPA) with support from the New York State Department of Environmental Conservation (NYSDEC). EPA is issuing the Proposed Plan as part of its public participation responsibilities under Section 117(a) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended and Section 300.430(f) of the National Contingency Plan (NCP). The alternatives summarized here are described in the remedial investigation and feasibility study (RI/FS) for this operable unit (referred to as operable unit one in the RI/FS), which should be consulted for a more detailed description of all the alternatives.

This Proposed Plan is being distributed to solicit public comments pertaining to all the remedial alternatives evaluated, as well as the preferred alternative.

COMMUNITY ROLE IN SELECTION PROCESS

EPA and NYSDEC rely on public input to ensure that the concerns of the community are considered in selecting an effective remedy for each Superfund site. EPA has set a public comment period which concludes on September 25, 1990. The public comment period includes a public meeting at which EPA will present the RI/FS Report and the Proposed Plan, answer questions, and accept both oral and written comments.

A public meeting will be held in the auditorium of the Old Bethpage Village Restoration, Round Swamp Road, Old Bethpage, New York on September 5, 1990 at 7:00 p.m. to allow EPA to present the conclusions of the RI/FS, to further elaborate on the preferred remedial alternative, and to receive public comments.

Documentation of the final remedy selection will be presented in the ROD after consideration of all the public comments. Comments will be summarized in the Responsiveness Summary Section of the Record of Decision.

The administrative record file, which contains the information upon which the selection of the response action will be based, is available at the following location:

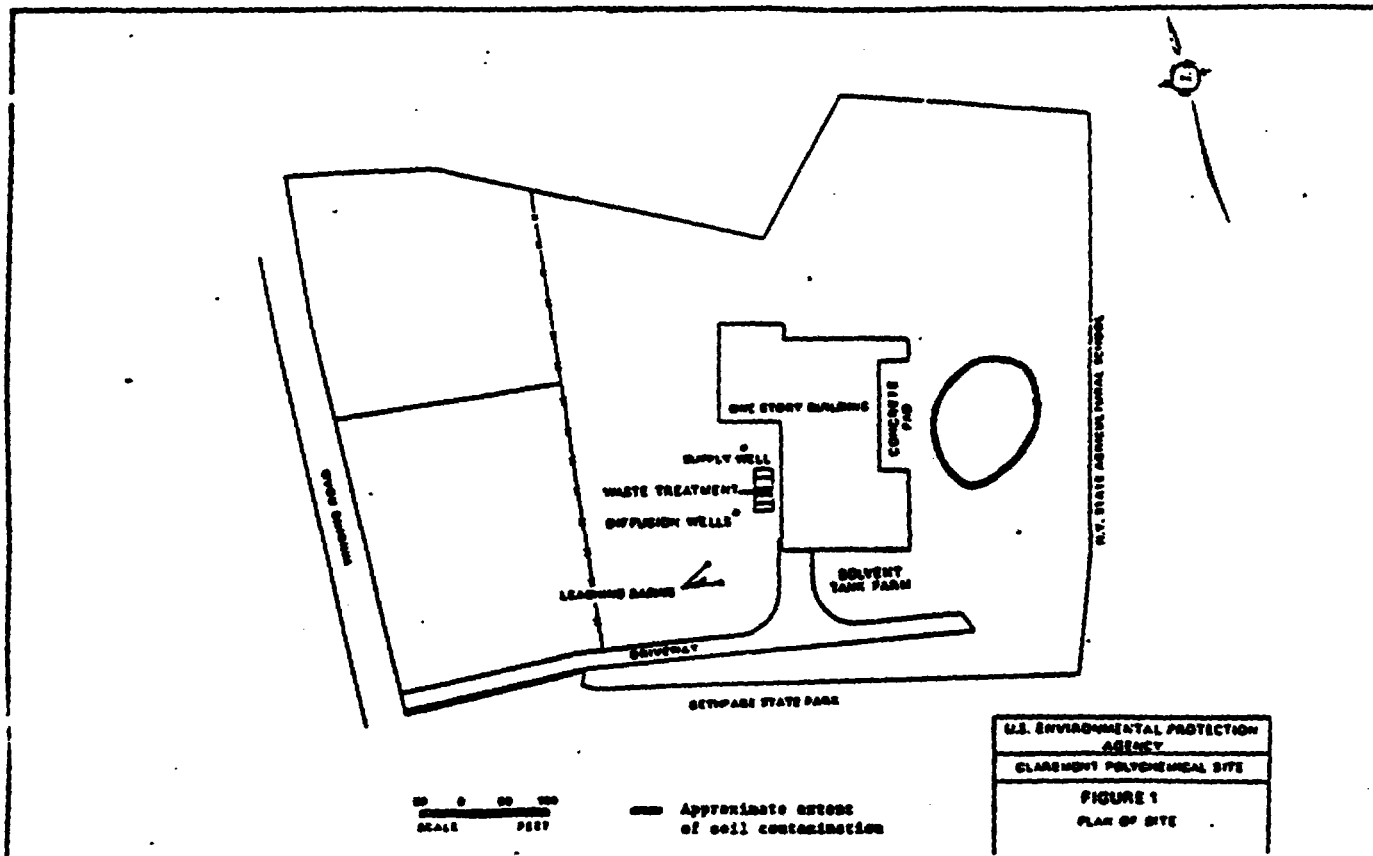
Plainview-Old Bethpage
Public Library
999 Country Road
Plainview, New York
Tel. (516) 938-0077

Hours: Mon-Fri., 9:00 a.m. to 9:00 p.m.
Sat., 9:30 a.m. to 5:30 p.m.
Sun., 1:00 p.m. to 9:00 p.m.

Dates to remember:
MARK YOUR CALENDAR

August 25 to September 25, 1990
Public comment period on remedies

September 5, 1990
Public meeting at the Old Bethpage
Restoration Auditorium, Old Bethpage, New
York at 7:00 p.m.



SITE BACKGROUND

The Claremont Polychemical site is an abandoned production facility located in central Long Island, in the community of Old Bethpage, Town of Oyster Bay, Nassau County, New York. The facility is situated in an area comprised of light industrial, commercial and institutional properties (Oyster Bay Solid Waste Disposal Complex, SUNY Agricultural and Technical College at Farmingdale, and Bethpage State Park). The Suffolk County line is approximately 800 feet east of the site.

The Site occupies approximately 9.5 acres on which a 35,000 square foot, one story, concrete building is located (see Figure 1). Other features include: treatment basins, aboveground tanks, underground tanks, leaching basins, dry wells, and water supply wells.

From 1968 until its closure in 1980, Claremont Polychemical manufactured inks and pigments for plastics, coated metallic flakes, and vinyl stabilizers. The principal wastes generated were organic solvents, resins, and wash wastes (mineral spirits).

Concern for contamination was linked to a discovery

in 1979 by the Nassau County Department of Health (NCDH) of 2,000 to 3,000 drums were scattered throughout the Site; some uncovered and others leaking. By September 1980 most of the drums were sorted and either removed from the site, or reused in the plant. Some of the material was burned in the plant's boiler. NCDH inspectors noted at the time that an area east of the building (spill area) was contaminated with organic solvents as a result of accidental and/or incidental spills and discharges. A subsequent removal action, in 1980, excavated the upper ten feet of a seventy-five foot by seventy-five foot area. The excavated material was placed on a plastic liner. Over the years, this liner has degraded and no longer is an impermeable layer. Groundwater samples from a monitoring well installed at the time indicated the presence of groundwater contamination directly under the site.

Claremont Polychemical and its affiliated companies entered into receivership in 1980. In 1983, Woodward-Clyde Consultants, under the direction of the New York State Department of Environmental Conservation, conducted a preliminary investigation of the site. In 1984, Velzy Associates conducted a limited study of the site for the property owners. Additional work was performed by C.A. Rich Consultants in response to a

request for information by the U.S. Bankruptcy Court. For the last four to five years two tenant businesses have been operating at the site under the supervision of the Bankruptcy court.

A preliminary evaluation by EPA on July 1988 revealed the presence of hazardous waste held in containers (e.g. drums) and other holding units (treatment basins, aboveground tanks, and a sump). In September 1988, EPA performed work consisting of the overpacking and/or stabilization of deteriorated containers and holding units. A second operable unit RI/FS (OU-II) dealing with the ultimate disposal of the above mentioned hazardous wastes was completed by EPA in July 1989. The Record of Decision for OU-II was issued on September 1989. The selected remedy is currently being implemented and consists of compatibility testing, bulking/consolidation, and treatment/disposal of the wastes at off-site, EPA-approved, treatment facilities.

SCOPE AND ROLE OF OPERABLE UNIT

EPA divided the remedial work being conducted at the Claremont Polychemical site into two operable units. The first operable unit addresses the overall site remediation (groundwater and soil) and is the focus of this document. This RI/FS contains the detailed information and data used in determining the nature and extent of the problem, and the development of remedial alternatives to address the problem.

As discussed above, the second operable unit deals only with the wastes held in containers and holding units. In September 1989, EPA decided to remove these wastes and treat/dispose of the materials off-site. This action, which includes the containers found inside the building (e.g. drums) and the wastes contained inside the holding units (e.g. treatment basins, aboveground tanks), is currently ongoing.

The overall objective of the remediation is to reduce the concentrations of contaminants to levels which are protective of human health and the environment. The remedy selected will achieve this objective by:

- o Soil Treatment. Treatment of the soil to remove the mobile organic contamination will result in the elimination of a long-term source of contamination of the groundwater.
- o Groundwater Treatment. Extraction and treatment of the contaminated groundwater will contain the migration of the plume and in time will achieve Federal and State standards for the volatile organic contaminants.

- o Building Decontamination. Removal of all hazardous materials from the building will eliminate any potential risk to human health and the environment, and will allow for unrestricted use of the building in the future.
- o Removal/Treatment of Underground Tanks, Liquid Wastes, and Associated Soils. Removal and treatment of these wastes will result in the elimination of the threat to human health and the environment from possible contact with the wastes. Also will result in the eradication of a long-term source of groundwater contamination.

SUMMARY OF SITE RISKS

A baseline risk assessment was developed as part of the remedial investigation for Claremont Polychemical. The risk assessment evaluates the potential impacts on human health and the environment if the contamination at the site is not remediated. This information is used by EPA to make a determination as to whether remediation of the site may be required.

Two basic scenarios were developed based on present (industrial) and possible future (residential) land use at the Site. Under both scenarios several pathways (direct contact, inhalation and ingestion) were evaluated for exposure to surface and subsurface soils, air, resuspended building dust, and ground water used for drinking and domestic purposes. The populations evaluated included on-site residents; off-site residents (including students and recreational users); and workers. Two estimates were developed, corresponding to the maximum concentration detected or "worst case scenario" and a representative exposure or "most reasonable case". EPA considers risks in the range of 10^{-4} to 10^{-6} to be acceptable. This risk range can be interpreted to mean that an individual may have a one in ten thousand to a one in a million increased chance of developing cancer as result of site-related exposure to a carcinogen over a 70-year lifetime under the specific exposure conditions at the Site.

Based on the RI report some of the contaminants of concern are: tetrachloroethene (PCE) and bis(2-ethylhexyl)phthalate (BEHP) in soil; 1,1,1-trichloroethane, tetrachloroethane and bis(2-ethylhexyl)phthalate in groundwater; cadmium, chromium and copper in the building; and 2-butanone, toluene and bis(2-ethylhexyl)phthalate in the underground storage tanks.

EPA's baseline endangerment assessment indicates that the most significant public health risk results from

Maximum Concentration of Selected Contaminants Detected in Soil, Groundwater, Building and Underground Tank Content

<u>MATRIX</u>	<u>COMPOUND</u>	<u>CONCENTRATION</u>
SOIL (mg/Kg)	bis(2-ethylhexyl) phthalate	270
	tetrachloroethene	26
	lead	98
GROUND WATER (ug/Kg)	1,1,1-trichloroethene	100
	trichloroethene	280
	tetrachloroethene	1,300
	ethylbenzene	180
	bis(2-ethylhexyl) phthalate	50
	chromium	159
BUILDING (ug/wipe)	bis(2-ethylhexyl) phthalate	70
	cadmium	313
	chromium	1,103
	copper	24,800
	lead	7,974
TANKS (mg/Kg)	2-butanone	82,000
	toluene	2,800
	xylylene	3,800
	bis(2-ethylhexyl) phthalate	23,000

the ingestion of groundwater, inhalation of groundwater volatiles (e.g. while showering), and the inhalation of resuspended dust inside the building under the future use scenario. Under the representative and worst-case scenario, the lifetime excess cancer risk of drinking the on-site groundwater are 1.36×10^{-4} and 4.53×10^{-4} , respectively. This indicates that an individual has a one in ten thousand and, a five in ten thousand chance of developing cancer as a result of drinking this water. Similarly, the representative and worst-case risk for people inhaling the on-site groundwater volatiles are 4.36×10^{-5} and 1.45×10^{-4} , respectively. Under the representative-case scenario, the potential excess cancer risk associated with exposure to resuspended building dust is 2.37×10^{-4} , and 5.09×10^{-5} under the worse-case scenario. For

ingestion of off-site groundwater the representative-case risk is 9.59×10^{-4} ; the worst-case risk is 3.20×10^{-4} .

The risk assessment contains the conclusion that direct exposure to site soils does not represent a significant risk to human health and the environment. However, they do pose a significant indirect risk by being a continuous source of groundwater contamination. Contaminants in excess of Federal and State standards were detected in the site groundwater plume. EPA policies and regulations allow remedial actions to be taken whenever cross-media impacts result in the exceedance of one or more Maximum Contaminant Levels. Consequently, soil remediation is warranted to remove this continuous source of contamination into the groundwater and expedite compliance with Federal and State groundwater standards.

Actual or threatened releases of hazardous substances from this site, if not addressed by the preferred alternative or one of the other active measures considered, may present a current or potential threat to the environment through the groundwater pathway.

SUMMARY OF REMEDIAL ALTERNATIVES

The remedial alternatives are organized according to the media areas which they address: soil (SC), groundwater (GW), building (BD) and underground tanks (T). These alternatives were screened based on implementability, effectiveness, and cost. The screening resulted in remedial alternatives upon which a detailed analysis was performed. Those alternatives considered in detail are discussed below. "Time to implement" is defined as the period of time needed for the alternative to be started (e.g. amount of time needed for the construction of a treatment facility). It does include the time required for remedial design activities which is assumed to take 2 years.

SOILS

Remedial Alternatives for Contaminated Soils (SC)

- o SC-1 No Further Action
- o SC-3 Excavation/Off-site Incineration/Backfill with Clean Soil
- o SC-4 Excavation/Low Temperature Enhanced Volatilization/On-Site Redeposition
- o SC-5 In-Situ Vacuum Extraction

Alternative SC-1: No Further Action

Capital Cost: none
 O & M Cost: \$34,900 per year
 Present Worth Cost: \$564,300
 Time to Implement: 1 month

The No Action alternative provides the baseline case for comparison with other soil alternatives. Under this alternative, the contaminated soil is left in place without treatment. A long-term groundwater monitoring program would be implemented to track the migration of contaminants from the soil into the groundwater. Existing monitoring wells would be used for monitoring. Five year reviews would be performed to assess the need for further actions.

Remedial investigation-related roll-off containers and drums containing soils and drilling mud would have to be transported off-site for treatment and disposal.

Alternative SC-3: Excavation/Off-Site Incineration/Backfill with Clean Soil

Capital Cost: \$18,535,100
 O & M Cost: none
 Present Worth Cost: \$18,535,100
 Time to Implement: 3.5 years

Site preparation for the remedial implementation would include a parking area, equipment staging area and stockpile area. Support facilities (e.g. offices) would also be installed on the site. An estimated total of 6,240 cubic yards (cy) of soil would be excavated. Excavation would be conducted under moistened conditions by spraying water over the surface to minimize fugitive dust and volatile contaminant emissions. The soil would be stockpiled prior to transportation to an off-site facility. The excavated soil would be transported to an off-site, EPA-permitted incineration facility for treatment and disposal. The roll-off containers and drums containing soil can also be re-packed into the same type of containers and transported for off-site incineration along with the soil. Clean soil would be used to backfill the excavated area. Site restoration would include the application of topsoil and seeding.

Alternative SC-4: Excavation/On-Site Low Temperature Enhanced Volatilization/On-Site Redeposition

Capital Cost: \$2,262,500
 O & M Cost: none
 Present Worth Cost: \$2,262,500
 Time to Implement: 3.5 years

Site preparation and soil excavation would be

performed as in Alternative SC-3. An estimated 6,240 cy of contaminated soil would be treated in a mobile enhanced volatilization (low temperature thermal extraction) unit brought on site. Low temperature thermal extraction consists of a feed system, thermal processor, afterburner, and scrubber. The excavated contaminated soil is placed in the feed hopper with a backhoe. The soil is then conveyed from the hopper to the thermal processor. Hot air from an air heater is injected into the thermal processors at a normal operating temperature of 260°C (500°F) which is well above the boiling points of most volatile organic compounds (VOCs). The volatilized compounds and moisture in the contaminated soil is then burned at 1090°C (2000°F) in an afterburner operated to ensure complete destruction. A portion of the off-gas is recirculated as combustion air to minimize fuel usage. The off-gas is then treated at the scrubber for particulate removal and acid gas adsorption. The off-gas leaves the system at a temperature of less than 93°C (200°F).

The volatilized contaminant-laden gas also can be treated by an activated carbon adsorption unit instead of an afterburner for PCE removal. A bag filter would be used to remove particulates from the gas before it enters the carbon adsorption unit. The treated soil would be free of volatile organics and would be stored for sampling and then used as backfill in the excavated areas. Site restoration would be performed as in Alternative SC-3. The roll-off containers and drums containing RI soil can also be treated with the soil.

Alternative SC-5: In-Situ Vacuum Extraction

Capital Cost: \$385,600
 O & M Cost: none
 Present Worth Cost: \$385,600
 Time to Implement: 4 years

Site preparation would be performed as in Alternative SC-3. However, the soil is left in place undisturbed, therefore no excavation would be required. This alternative involves the installation of vacuum extraction wells over the contaminated soils. Each well would have a maximum depth of 10 feet. The vacuum wells would be connected via a pipe system to a skid-mounted high volume vacuum pump. The vacuum would pull air through the contaminated soils, within a radius of approximately 20 feet from the wells, depending on soil composition and volatility of the contaminant. The air containing the stripped VOCs would be fed through a condenser to recover the free product and moisture, and then through an emissions control system, i.e., a vapor phase carbon adsorption system. The condensed product would be drummed and transported to an off-site treatment and disposal

facility (most likely to be an incinerator). The roll-offs and drums containing soil can also be treated on-site via this technology by using a one-pipe system within the drum connected to a vacuum pump. The treated soils would be used on-site for backfilling and regrading.

GROUNDWATER

Remedial Alternatives for Contaminated Groundwater (GW)

- o GW-1 No Further Action
- o GW-2 Pumping/Air Stripping/Reinjection; Southern Site Boundary (0.2 mgd)
- o GW-3A Pumping/Air Stripping/Reinjection; Leading Edge of Plume (1.9 mgd)
- o GW-3B Pumping/Air Stripping/Reinjection; Southern Site Boundary and Downgradient (1.0 mgd)
- o GW-5A Pumping/UV-Chemical Oxidation/Reinjection; Leading Edge of Plume (1.9 mgd)
- o GW-5B Pumping/UV-Chemical Oxidation/Reinjection; Southern Site Boundary and Downgradient (1.0 mgd)

Alternative GW-1: No Further Action

Capital Cost: none
 O & M Cost: \$28,400
 Present Worth Cost: \$464,400
 Time to Implement: 1 year

This alternative includes the use of existing wells to conduct a long-term groundwater sampling program which would monitor the migration of contaminants of concern in the aquifer. A total of ten wells, including existing upgradient, on-site and downgradient wells, would be utilized in order to sample the groundwater from the shallow to deeper portions of the aquifer and to track contaminant migration off-site. Regular five-year reviews would be performed to assess the need for additional remedial actions.

Alternative GW-2: Pumping/Pretreatment/Air Stripping/Carbon Adsorption/Reinjection; Pumping at the Southern Site Boundary (0.2 mgd)

Capital Cost: \$214,800
 O & M Cost: \$378,700
 Present Worth Cost: \$3,350,500
 Time to Implement: 1.5 years

This alternative includes the installation of three extraction wells downgradient of the site in order to extract 0.2 million gallons per day (mgd) of groundwater from the site contaminant plume. This groundwater would be piped to the Old Bethpage Landfill groundwater treatment system for treatment and disposal. The Landfill groundwater treatment system is currently under construction and scheduled to be completed in 1991. The 0.2 mgd is the maximum allowable input from the Claremont Site to the Landfill pump and treatment system due to design limitations of that system. The treated effluent would be reinjected into the aquifer through a recharge basin being constructed as part of the Landfill system. This flow rate is below the modeled maximum pumping rate of 1.9 mgd estimated for removal and treatment of the site contaminant plume. (The original estimate of the volume of contaminated groundwater to be treated was much less than the current estimate). In addition, the landfill treatment system is only planned to operate for 10 years based upon the time estimated for remediation to be completed for the Old Bethpage plume. Long-term monitoring using the new extraction and existing wells would be performed for 30 years in order to monitor any continued migration of remaining contamination in the groundwater, both during and after the operation of the landfill treatment system.

Alternative GW-3A: Pumping/Pretreatment/Air Stripping/Carbon Adsorption/Reinjection; Pumping at the Leading Edge of the Plume (1.9 mgd)

Capital Cost: \$4,044,700
 O & M Cost: \$1,622,900
 Present Worth Cost: \$28,978,000
 Time to Implement: 3 years

In this alternative, three extraction wells would be installed downgradient of the site on the Bethpage State Park property in order to capture the entire site contaminant plume. Approximately 1.9 mgd would be pumped to an on-site treatment facility. The treated groundwater would be pumped to a discharge system for reinjection to the aquifer via three reinjection wells. The siting of the extraction wells would be completed during the design phase based on technical criteria.

The groundwater treatment facility would consist of two major processes: pretreatment to remove metals (iron, manganese, arsenic, and thallium) and air strippers followed by a carbon adsorption system to remove volatile and semivolatile organics. The pretreatment system is designed to effectively reduce the metal concentrations in the groundwater below the Federal and New York State Groundwater Standards. This pretreatment system would consist of a metals precipitation system and dual media pressure filter.

The resulting sludge would require off-site treatment and disposal.

Two air strippers in series followed by liquid phase carbon adsorption would be used to lower the levels of organic contamination below the state requirement for groundwater standards. Approximately 95 to 99 percent of the volatile organics would be removed by air stripping. The stripped groundwater would be pumped to a two-stage liquid phase carbon adsorber for removal of the remaining volatiles and BEHP, and phenol. The volatile organic emissions from the air stripping would be adsorbed on a vapor phase activated carbon system in order to meet air quality standards. Once the vapor phase and liquid phase carbon is exhausted, it would be removed for off-site regeneration or incineration, thus destroying all organic contaminants. Two treatment trains (parallel systems for treating the groundwater) rated at 660 gallons per minute (gpm) each would be required.

Environmental monitoring would be required during the life of the treatment plant operation (i.e., 30 years). Air emissions would be monitored to confirm compliance of the air discharge limit. Groundwater samples would be taken every six months to monitor groundwater contamination migration and effectiveness of remediation. Under this alternative it is estimated to take 62 years to achieve remediation of the groundwater plume.

Alternative GW-3B: Pumping/Pretreatment/Air Stripping/Carbon Adsorption/Reinjection; Pumping at the Southern Site Boundary and Downgradient (1.0 mgd)

Capital Cost: \$4,936,000
O & M Cost: \$1,100,400 (first ten years)
\$701,900 (next six years)
Present Worth Cost: \$15,620,400
Time to Implement: 3 years

In this Alternative, two extraction wells would be installed slightly downgradient of the southern boundary of the site to capture the most contaminated groundwater. Two additional extraction wells would be located downgradient from the site to capture the off-site (diluted) migrating plume. Groundwater would be pumped at a rate of 1 mgd and treated on-site as in Alternative GW-3A. In this alternative four treatment trains rated at 175 gpm would be used. Treated groundwater would be reinjected into the aquifer.

This alternative would be implemented in two phases. During the first phase extraction wells would be installed at the southern boundary requiring two treatment trains to treat the concentrated groundwater

plume. During the second phase the diluted groundwater plume would be extracted, requiring the installation of two additional treatment trains. In between these phases (approximately 1-2 years), critical information would be developed concerning the impact of neighboring pump and treatment systems (e.g. Old Bethpage Landfill) on the Claremont Polychemical plume. Additional sampling would be conducted to further delineate the extent of the Claremont plume. Implementing this remedy in two phases would provide increased overall efficiency and flexibility. This optimized extraction and treatment system design would be better able to address the remediation of the Claremont site plume. It is estimated that 16 years of pumping and treatment would be required to complete the groundwater remediation.

Alternative GW-5A: Pumping/Pretreatment/UV-Chemical Oxidation/Reinjection; Pumping at the Leading Edge of the Plume (1.9 mgd)

Capital Cost: \$4,088,800
O & M Cost: \$108,000
Present Worth Cost: \$21,121,100
Time to Implement: 3 years

This remedial alternative is similar to Alternative GW-3A except that a chemical oxidation process rather than air stripping/adsorption process would be used to remove the volatile and semivolatile organics in the groundwater. An ultraviolet light-hydrogen peroxide oxidation system is selected as the representative process to treat the contaminated groundwater. This oxidation system would employ a combination of hydrogen peroxide (H_2O_2) and ultraviolet (UV) light to chemically oxidize the organic contaminants in the groundwater to carbon dioxide, water and chlorides. Multiple units would be required. The treated groundwater would have organic concentrations below State and Federal standards.

Alternative GW-5B: Pumping/Pretreatment/UV-Chemical Oxidation/Reinjection; Pumping at the Southern Site Boundary and Downgradient (1.0 mgd)

Capital Cost: \$4,069,800
O & M Cost: \$1,008,600 (first ten years)
656,000 (next six years)
Present Worth Cost: \$13,902,300
Time to Implement: 3 years

Groundwater extraction, pretreatment, and reinjection would be accomplished as in Alternative GW-3B. The UV- H_2O_2 system would operate as in Alternative GW-5A except that smaller treatment units would be used.

BUILDING

Remedial Alternatives for Building (BD)

- o BD-1 No Further Action
- o BD-2 Building Decontamination/Waste Treatment and Disposal

Alternative BD-1: No Further Action

Capital Cost: \$8,800
 O & M Cost: \$2,100 per year
 Present Worth Cost: \$41,100
 Time to Implement: 1 month

The No Action alternative provides the baseline against which other alternatives can be compared. It would result in leaving the contaminated dust, asbestos insulation, and contaminated water in floor drains and condensers intact in the building. The only additional security measure implemented to completely seal the building would be waterproofing of the building ceiling.

A long-term maintenance program, including site inspections, would be implemented in order to ensure that the building is completely sealed and is not accessible to the public in the future.

Alternative BD-2: Building Decontamination

Capital Cost: \$186,200
 O & M Cost: none
 Present Worth Cost: \$186,200
 Time to Implement: 1 month

The inside contaminated surfaces of the building (i.e., walls, floors, and hoods) would be decontaminated using dusting, vacuuming and wiping procedures. In addition three dust collectors on the roof would be emptied. The collected dust would be transported to an off-site treatment and disposal facility. The contaminated water in the floor drains and condensers also would be removed and disposed of off-site.

UNDERGROUND STORAGE TANKS

Remedial Alternatives for Underground Storage Tanks (T)

- o T-1 No Further Action
- o T-2 Removal and Off-Site Disposal

Alternative T-1: No Further Action

Capital Cost: \$2,600
 O & M Cost: \$2,200 per year
 Present Worth Cost: \$84,300
 Time to Implement: 4 months

Under this alternative the underground tanks and contents would be left in place. The large amounts of hazardous materials contained in the tanks would continue to constitute a potential source of soil and groundwater contamination. A monitoring program using the existing monitoring wells would be established to detect the movement of these compounds into the groundwater.

Alternative T-2: Removal and Off-Site Treatment/Disposal

Capital Cost: \$336,300
 O & M Cost: none
 Present Worth Cost: \$336,300
 Time to Implement: 4 months

This alternative entails excavation of overburden soils, pumping of tank contents, tank cleaning, removal of tanks and appurtenant equipment, off-site disposal/treatment of tanks, equipment and liquid waste, and backfilling with clean soil.

The underground tanks and appurtenant piping would be drained and cleaned of any residual sludge. Tanks would be hoisted and subsequently loaded on trucks and hauled for off-site disposal. Other components of the tank farm, such as pumps, concrete pads, and the pumphouse, would be demolished and transported off-site for disposal. At the disposal facility, the steel tanks would be retested for hazardous waste contents. Nonhazardous tanks would either be sold for scrap or landfilled, depending on the extent to which they can be decontaminated. Hazardous tanks and tank contents would be disposed of at an off-site EPA-approved hazardous waste treatment and disposal facility.

Highly contaminated soils discovered during tank excavation would be stockpiled in roll-off containers and subsequently transported to an off-site EPA-licensed treatment and disposal facility. Sampling of the soils underlying the tank farm would be conducted as part of this alternative to further delineate the nature and extent of soil contamination within this area and to assess effectiveness of the remedy.

EVALUATION OF THE REMEDIAL ALTERNATIVES

The preferred alternative for the remediation of the site combines source control alternatives with active restoration of the groundwater. Alternative SC-4, excavation of the contaminated soils, on-site low temperature thermal treatment, and on-site redeposition is the preferred alternative to clean up the soils. The preferred alternative for remediation of the groundwater contamination is alternative GW-3B, extraction of the groundwater at the site perimeter and downgradient, followed by treatment (metal precipitation, air stripping and carbon adsorption) and reinjection of the treated water into the aquifer. Alternative BD-2 and T-2 are the preferred alternatives for the building and underground tank areas. Alternative BD-2 entails removal of contaminated dust from the building by vacuuming and wiping, and removal of the liquid wastes from drains and condensers. Under alternative T-2, the underground storage tanks, tank contents, and the soil around it would be excavated and disposed of at an off-site treatment facility.

Based on current information, this combination of alternatives provides the best balance among the nine criteria that EPA uses to evaluate alternatives and to ensure that all important considerations are factored into remedy selection decisions. The Analysis section profiles the performance of the preferred alternative against the nine criteria, noting how it compares to other options under consideration.

The evaluation criteria is noted below and explained below.

- o Overall protection of human health and the environment addresses whether or not a remedy provides adequate protection and describes how risks posed through each exposure pathway (based on a reasonable maximum exposure scenario) are eliminated, reduced, or controlled through treatment, engineering controls, or institutional controls.
- o Compliance with applicable or relevant and appropriate requirements (ARAR's) addresses whether or not a remedy would meet all of the applicable or relevant and appropriate requirements of other Federal and State environmental statutes and requirements or provide grounds for invoking a waiver.
- o Long-term effectiveness and permanence refers to the ability of a remedy to maintain reliable protection of human health and the environment over time, once cleanup goals have been met. It also addresses the

magnitude and effectiveness of the measures that may be required to manage the risk posed by treatment residuals and/or untreated wastes.

- o Reduction of toxicity, mobility, or volume through treatment is the anticipated performance of the treatment technologies, with respect to these parameters, a remedy may employ.
- o Short-term effectiveness addresses the period of time needed to achieve protection and any adverse impacts on human health and the environment that may be posed during the construction and implementation period until cleanup goals are achieved.
- o Implementability is the technical and administrative feasibility of a remedy, including the availability of materials and services needed to implement a particular option.
- o Cost includes estimated capital and operation and maintenance costs, and net present worth costs.
- o State acceptance indicates whether, based on its review of the RI/FS and Proposed Plan, the State concurs with, opposes, or has no comment on the selected remedy at the present time.
- o Community acceptance will be assessed in the Record of Decision (ROD) and refers to the public's general response to the alternatives described in the Proposed Plan and the RI/FS reports.

ANALYSIS

Comparison Among Soil (SC) Alternatives

The following discussion compares the relative performance of each soil alternative using the specific evaluation criteria listed previously.

- o Overall Protection of Human Health and the Environment

Alternative SC-1 does not meet the remedial objectives, thus it is not protective of human health and the environment. As a result of this alternative, the groundwater would continue to be contaminated by the soil source for some unknown period. Alternatives SC-3, SC-4 and to some extent SC-5 would meet the remedial objective of protecting the groundwater from

the soil source by achieving the cleanup level in soils. Therefore, alternatives SC-3, SC-4 and SC-5 (to a lesser extent) are protective of human health and the environment.

o Compliance with ARARs

All technologies proposed for use in Alternative SC-3 through SC-5 would be designed and implemented to satisfy all ARARs. Federal and State regulations dealing with the handling and transportation of hazardous wastes to an off-site treatment facility would be followed. The off-site treatment facility would be fully EPA-approved. RCRA wastes would be treated using specific technologies or specific treatment levels, as appropriate, to comply with land disposal restrictions.

o Long-Term Effectiveness and Permanence

Alternative SC-1 would only monitor the migration of the contaminants and does not provide treatment or containment. Therefore, it does not provide effective or permanent long-term protection of groundwater at the site.

Alternatives SC-3, SC-4 and SC-5 are similar in their ability to mitigate the risks through the removal and treatment of site contaminants to meet the required cleanup levels. Alternatives SC-3 and SC-4 provide a high degree of effectiveness since they can effectively remove the contaminants from the soil. Although Alternative SC-5 is intended to have a similar ability to mitigate soil contamination, due to the technical limitations of in-situ process, SC-5 may not ensure removal of contaminants to the cleanup level.

o Reduction in Toxicity, Mobility, or Volume

Alternative SC-1 would provide a very slow and gradual reduction in toxicity through rainfall percolation. It would provide no reduction in contaminant mobility.

Alternatives SC-3, SC-4, and SC-5 again are similar, in that each would result in significant reductions in the toxicity, mobility, and volume of the treated material. Material toxicity would be reduced by thermal destruction of contaminants in Alternatives SC-3 and SC-4 and by off-site treatment of the condensed organic product in SC-5. Alternative SC-3 would provide the greatest degree of reduction in toxicity of the contaminants followed by SC-4 and SC-5.

o Short-Term Effectiveness

The implementation of Alternative SC-1 would not result in additional risk to the community during

implementation. Alternatives SC-3, SC-4, and SC-5 include activities such as contaminated soil excavation and off-site transport or on-site treatment that could potentially expose residents to volatilized contaminants and contaminated dust. Engineering controls and other measures (e.g. restricting access to the site to authorized personnel only) would effectively eliminate any impact these activities would have on nearby residents. Alternative SC-5 includes in-situ treatment of contaminated soils, so exposure risks to residents from excavation is much less of a concern for this alternative than SC-3 and SC-4. Under alternatives SC-4 and SC-5, proper air emission control units would be installed to minimize the potential for public health exposures because of low-level emissions from the on-site treatment units.

Alternative SC-1 would result in a lower overall risk to workers than other alternatives since subsurface soil is not disturbed. Alternatives SC-4 and SC-5 provide treatment on-site, thereby reducing potential risk to residents along transportation routes. Alternatives SC-3, SC-4, and SC-5 would present a potential for worker exposure to volatilized contaminants during waste excavation and/or handling. To minimize and/or prevent such exposures, use of personal protection equipment would be necessary.

SC-1 would be implemented in approximately one month. Alternatives SC-3, SC-4 and SC-5 would be implemented in about 3.5, 3.5 and 4 years, respectively.

o Implementability

Components of Alternatives SC-1, SC-3, SC-4 and SC-5 would utilize relatively common construction equipment and materials. Little construction difficulty would be encountered with any of the alternatives. However, Alternative SC-1 would be the easiest to implement.

The technologies proposed for use in the alternatives are proven and reliable in achieving the specified process efficiencies and performance goals. Low temperature thermal enhanced volatilization and in-situ vacuum extraction have been successfully tested at other Superfund sites. However, there is a greater degree of uncertainty regarding the achieving of cleanup levels using in-situ vacuum extraction since this technology has only been performed on a limited full-scale basis at similar contaminant concentration levels.

o Cost

The total present worth costs for the alternatives evaluated ranged from \$385,600 (in-situ vacuum

extraction) to \$18,535,100 (off-site treatment and disposal). Present worth considers a 5% discount rate, and a 30-year operational period in the case of SC-1. All other source control alternatives would not require any operation and maintenance cost. Therefore, present worth for these alternatives (SC-3, SC-4 and SC-5) would be the same as the capital cost. SC-4 provides the same protection as alternative SC-3 at a fraction of the cost (\$2,262,500 versus \$18,535,100). Although alternative SC-5 is significantly less expensive than SC-3 and SC-4, it may not provide the same level of protection.

o State Acceptance

NYSDEC concurs with the preferred alternative selected.

Comparison of the Groundwater (GW) Alternatives

The following section compares the relative performance of each groundwater alternative.

o Overall Protection of Human Health and the Environment

The no-action alternative would not protect human health and the environment. Existing contamination would continue to degrade the aquifer and migrate off-site.

Alternative GW-2 would not ensure protection of the health of future users of the aquifer nor would it improve the overall quality of the aquifer or prevent the continued migration of contamination.

Each of the alternatives GW-3A, GW-3B, GW-5A and GW-5B would be significantly more protective than GW-1 or GW-2 since they would reduce the toxicity, mobility, and volume of contaminants in the aquifers. Each treatment alternative considered would equally protect human health and the environment however, the amount of time required to achieve the ARARs varies greatly among alternatives.

o Compliance with ARARs

Alternatives GW-1 and GW-2 would result in contaminant concentrations remaining above ARARs (for drinking water or protection of the groundwater resources) for a long period of time (100 years).

Alternatives GW-3A, GW-3B, GW-5A and GW-5B would be designed to achieve all drinking water standards as well as those required for groundwater protection in the treated water stream which is to be reinjected. Each of these alternatives would be capable of providing the

required contaminant removal levels. Because experience with UV-chemical systems is limited, its effectiveness is slightly less certain but considered achievable. Each of the alternatives would comply with air emission standards as well as regulations for the handling and disposal of the generated wastes (e.g. spent carbon).

o Long-Term Effectiveness and Permanence

Alternative GW-1 does not provide treatment but would attempt to restrict usage of contaminated groundwater. Alternative GW-2 provides short-term treatment, but would not restore the contaminated aquifer for its best beneficial future use.

Alternatives GW-3A, GW-3B, GW-5A, and GW-5B all reduce the potential risks associated with groundwater ingestion by extracting, treating, and recharging the treated groundwater to remove contaminants from the aquifer. The time required to achieve these risk reductions depends on the effective extraction rates from the aquifer and limitations on extraction system placement due to the large area on the contaminant plume. Long-term effectiveness of each system is dependent on monitoring and maintenance of the treatment system.

Alternatives GW-1 and GW-2 would take approximately 100 years to achieve the remedial action objectives. Alternatives GW-3A and 5A would theoretically achieve the remedial action objectives in 62 years, whereas GW-3B and 5B would achieve the remedial action objectives in approximately 16 years.

Proper air pollution control measures would be established under alternatives GW-3A and GW-3B to offset potential risks from the air stripper(s), while no pollution control measures are deemed necessary for alternatives GW-5B and 5A. Alternatives GW-3A and GW-3B require the disposal of more spent carbon than GW-5A and GW-5B since vapor phase carbon adsorption is used.

o Reduction in Toxicity, Mobility, or Volume

Alternative GW-1 would very slowly and gradually reduce the toxicity of contaminants through dilution. Alternative GW-2 would reduce the toxicity and volume of contaminants more rapidly than GW-1. Neither Alternative GW-1 nor GW-2 would permanently reduce the mobility of the contaminants. For alternative GW-2, the off-site portion of the contaminated groundwater plume would continue to migrate downgradient and reduction of toxicity, mobility and volume would be achieved only by natural attenuation.

Alternatives GW-3A, GW-3B, GW-5A and GW-5B would reduce the toxicity, mobility, and volume of contaminants in the aquifers to a greater extent than GW-1 and GW-2. Alternatives GW-3B and 5B would reduce the toxicity, mobility, and volume to a greater extent and at a much faster rate than the other alternatives. Alternatives GW-3A and GW-3B would use air stripping and carbon adsorption to remove the contaminants, while GW-5A and GW-5B would oxidize most of the organic compounds.

o Short-Term Effectiveness

Implementation of Alternative GW-1 would result in no additional risk to the community during remedial activities. Alternative GW-2 could present additional risks to the community resulting from the installation of the extraction wells and pipelines for transportation of contaminated groundwater. Alternatives GW-3A, 3B, and GW-5A and 5B include excavation activities, installation of the collection and reinjection system, and construction of the treatment plant which could result in potentially exposing residents to volatilized contaminants and contaminated dust. The treatment plant would be constructed on-site. Proper engineering controls would ensure that the impact of such activities would be insignificant. All alternatives except Alternative GW-1 and GW-2 would provide a process residual requiring proper handling and disposal.

Alternative GW-1 would result in no additional risk to workers, and GW-2 would result in a lower overall worker risk than other alternatives because of the limited soil disturbance activities. Personal protection equipment would be used under alternatives GW-3A, GW-3B, GW-5A and GW-5B to minimize the worker's potential exposure to volatilized contaminants during installation of the collection, treatment, and recharge systems.

o Implementability

Alternative GW-1 would be easily implemented. Alternative GW-2 would require institutional management to maintain and operate the pumping system and to coordinate with the Landfill treatment system. Alternatives GW-3A, GW-3B, GW-5A and GW-5B would utilize relatively common construction equipment and materials. Little construction difficulty would occur with any of the alternatives.

The air stripping and carbon adsorption technologies proposed for use in Alternatives GW-3A and GW-3B are proven and reliable in achieving specified process efficiencies and performance goals. While there has

been limited experience with UV-chemical oxidation, it has been successful in several groundwater treatment facilities.

All proposed technologies are readily available from a number of sources, with the exception of UV-chemical oxidation. It is expected that additional UV-chemical equipment manufacturers would be available once this technology becomes more mature.

Alternatives GW-3A, GW-3B, GW-5A, and GW-5B would require institutional management of the operation and maintenance of the treated groundwater reinjection system. Siting the treatment facility would not present any problems as there is enough space available on-site. Associated off-site facilities (e.g. piping, pumps, extraction wells and reinjection wells) would be potentially more complex to locate as both technical and land use factors would be considered.

Off-site disposal facilities are available for the disposal of the pretreatment sludge and spent carbon generated from Alternatives GW-3A, GW-3B, GW-5A and GW-5B.

o Cost

The present worth costs of all GW alternatives ranged from \$464,400 (GW-1) to \$28,967,000 (GW-3A). Alternative GW-1 would be least expensive followed by GW-2, GW-5B, GW-3B, GW-5A and GW-3A. Of the alternatives providing complete remediation of the groundwater contamination, Alternative GW-3B provides the lowest present worth cost, \$15,620,400.

o State Acceptance

NYSDEC concurs with the preferred alternative selected.

Comparison of Building Alternatives (BD)

Only two building alternatives: No-Action and Building Decontamination were evaluated.

o Overall Protection of Human Health and the Environment

In Alternative BD-1, hazardous material is left in the building. Human health and the environment remain protected only as long as building security can be effectively enforced and building integrity maintained. Alternative BD-2 removes all hazardous material from the building so it is fully protective of human health and the environment. In addition, Alternative BD-2 allows for future reuse of the building.

o Compliance with ARARs

Alternative BD-1 would not contravene any ARARs since no action would be taken. Alternative BD-2 would comply with the ARARs relevant to the transport of the wastes to an off-site facility. The off-site treatment facility would be fully EPA-permitted and therefore meet applicable regulations.

o Long-Term Effectiveness and Permanence

Alternative BD-1 would not alter conditions within the building; hazardous materials would remain in the building. Public protection would rely on maintaining building security which may be difficult to enforce. The building could not be used for any purpose. Alternative BD-2 removes all hazardous materials from the building for off-site treatment and disposal so that long-term exposure risks from the building would be eliminated. Painting and sealing the building (alternative BD-2) would provide additional protection and would allow for unrestricted use of the building in the future.

o Reduction in Toxicity, Mobility or Volume

Alternative BD-1 provides no reduction in toxicity or volume of contaminants; mobility is not an issue since the building is self-contained. Alternative BD-2 provides for complete reduction in toxicity and volume since all contaminated material is removed from the building.

o Short-term Effectiveness

Implementation of BD-1 should result in no additional risks to the community or the environment as long as building security and integrity can be maintained. Alternative BD-2 involves removal and transport of the contaminants from the building so there are some minimal public exposure risks as well as environmental impact from potential waste spills resulting from a possible transport accidents during remedial activities. Worker exposure risks would be minimized through the use of personal protection equipment. Long-term maintenance would continue indefinitely for Alternative BD-1. Building decontamination, Alternative BD-2, could be accomplished in approximately 3 months.

o Implementability

Both alternatives are readily implementable; neither involves any major construction activities. Methods and services for building decontamination are technically feasible and readily available. Alternative BD-1 would require institutional management i.e., a long-term building maintenance program, whereas Alternative

BD-2 does not require any long-term management.

o Cost

The present worth costs for alternatives BD-1 and BD-2 are \$41,100 and \$186,200, respectively.

o State Acceptance

NYSDEC concurs with the preferred alternative selected.

Comparison of the Underground Tank (T) Alternatives

o Overall Protection of Human Health and the Environment

Alternative T-1 would not protect human health and the environment as the threat of soil and groundwater contamination would not be reduced. The excavation and removal of contaminated tanks and their contents from the site (T-2) would significantly reduce the potential human health and environmental risks associated with potential leaking of contaminants from tanks into the soil and groundwater.

o Compliance With ARARs

Alternative T-1 would not comply with groundwater ARARs, as continual source of contamination would not be removed. The disposal of the underground tanks (T-2) would eliminate the source of contamination and would satisfy applicable State and Federal ARARs, as the tanks and related wastes would be removed, transported, and disposed of in accordance with all regulations.

o Long-Term Effectiveness

Under alternative T-1, the tanks and their associated hazardous wastes would remain as a potential source of soil and groundwater contamination. Alternative T-2, excavation and removal of the underground storage tanks, tank debris, and highly contaminated soil from the site, would reduce the potential human health and environmental risks associated with the tanks' potential for leaking contaminants into the soil and groundwater in the future.

o Reduction of Toxicity, Mobility or Volume

No significant reduction of toxicity, mobility or volume would result from the implementation of the no-action alternative. Alternative T-2, excavation and off-site treatment, would result in a permanent reduction of toxicity, mobility and volume. The wastes would be

Summary of Alternative Analysis.

<u>REMEDY</u>	<u>CAPITAL COST</u>	<u>PRESENT WORTH COST</u>	<u>TIME TO ACHIEVE REMEDY (years)</u>
SOIL			
SC-1	0	864,300	30
SC-3	18,535,100	18,535,100	3.5
SC-4	2,262,500	2,262,500	3.5
SC-5	385,800	385,800	5
GROUNDWATER			
GW-1	0	464,400	100
GW-2	214,800	3,350,500	103
GW-3A	4,044,700	26,978,100	65
GW-3B	4,836,000	15,620,400	19
GW-5A	4,088,900	21,121,100	65
GW-5B	4,089,800	13,902,300	16
BUILDING			
BD-1	8,800	41,100	30
BD-2	186,200	186,200	3.3
UNDERGROUND TANKS			
T-1	0	64,300	30
T-2	336,300	336,300	3.1

completely removed and either destroyed at the treatment facility or reused if practical.

o Short Term Effectiveness

Alternative T-1 would result in no additional risk to the community during implementation.

The potential public health threats to workers and area residents associated with the implementation of alternative T-2 include: direct contact of workers with tank contents and potentially contaminated soils; inhalation of fugitive dust, organic vapors, and emissions generated during construction and excavation activities; and improper handling of soil and hazardous liquids. Several steps would be taken to minimize these threats including: site access would be restricted to authorized personnel only, and dust control measures such as wind screens and water sprays would be used to minimize fugitive dust emissions.

The risk to workers during excavation would be minimized by the use of adequate personal protection equipment to prevent direct contact with potentially contaminated soil, liquids, and inhalation of fugitive dust and volatile organic compounds.

Other potential short-term impacts contemplated as part of T-2 would be an increase in traffic and noise pollution resulting from hauling soils (as necessary), hazardous liquids, and tanks to an off-site treatment facility, as well as the traffic associated with transporting new soil for backfill to the Site. Transportation of excavated hazardous liquids may introduce short-term risks with the possibility of spillage along the transport route and potential exposure of the public to hazardous material. A spill contingency plan would be developed to address and minimize the likelihood and potential impact of this occurrence. The actual remediation period for this alternative is estimated to be 8 weeks.

o Implementability

All the components of both remedial alternatives are well developed and commercially available. The contained tanks and related wastes would have to undergo a series of analyses prior to acceptance for treatment at the off-site facility. Sufficient land is available at the site for mobilization and temporary storage of the excavated soil and materials awaiting pre-transport decontamination. Excavation, treatment tank decommissioning, transportation to an off-site treatment facility, solid and liquid waste disposal, and restoration of the site can be performed without any major difficulty.

o Cost

The total present worth cost of alternative T-1 is \$64,300. The total present worth cost of alternative T-2, which represents the estimated construction cost for the eight week remediation program, is estimated at \$336,300. Operation and maintenance costs have not been included in the cost estimate since the duration of the remediation program is less than one year.

o State Acceptance

NYSDEC concurs with the preferred alternative selected.

SUMMARY OF THE PREFERRED ALTERNATIVE

In summary, the preferred alternative will achieve substantial risk reduction through a combination of source control alternatives SC-4 (low temperature enhanced volatilization of soil contaminants) and T-2 (tank removal and off-site treatment), with active restoration of the groundwater (GW-3B), and building decontamination (BD-2).

The preferred alternative achieves this risk reduction more quickly and at substantially less cost than the other options. Therefore, the preferred alternative will provide the best balance of trade-offs among alternatives with respect to the evaluating criteria. Based on the information available at this time, EPA and the NYSDEC believe that the preferred alternative will be protective of human health and the environment, will comply with ARARs, will be cost effective, and will utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. The remedy also will meet the statutory preference for the use of a remedy that involves treatment as a principal element.

APPENDIX C. SIGN-IN SHEET

[illegible]

APPENDIX D. OVERHEAD TRANSPARENCIES

**Public Meeting
Claremont Polychemical
Superfund Site**

**United States
Environmental
Protection Agency**

September 5, 1990

Site History

- **CONSTRUCTION OF THE CLAREMONT POLYCHEMICAL FACILITY BEGAN IN 1966**
- **PLANT OPERATION BEGAN IN 1968**
- **MORE THAN A THOUSAND DRUMS WERE DISCOVERED IN 1979 BY THE NASSAU COUNTY DEPARTMENT OF HEALTH (NCDOH)**
- **MOST OF THE DRUMS WERE GONE AND AREA OF CONTAMINATED SOIL (SPILL AREA) WAS DISCOVERED IN 1980 BY NCDOH**
- **SOILS WERE EXCAVATED AND PLACED ON PLASTIC LINERS IN 1980 BY THE COMPANY**
- **COMPANY ENTERED INTO CHAPTER 11 PROCEEDINGS IN 1980**
- **NEW YORK DEPARTMENT OF LAW ASSUMES THE LEAD ON THE SITE AND ATTEMPTS TO NEGOTIATE AN AGREEMENT WITH RESPONSIBLE PARTY**

Site History (Cont'n 2 of 3)

- **SITE RECOMMENDED FOR PLACEMENT IN NATIONAL PRIORITY LIST IN OCTOBER 1984**
- **SITE WAS FINALLY INCLUDED IN NATIONAL PRIORITY LIST IN JUNE 1986 (RANKED 614)**
- **EPA ASSUMES THE LEAD IN 1986 AND SENDS OUT NOTIFICATION LETTER TO POTENTIALLY RESPONSIBLE PARTY (PRP) IN NOVEMBER 1987**
- **NO RESPONSE WAS RECEIVED AND FUNDS FOR REMEDIAL INVESTIGATION/FEASIBILITY STUDY (RI/FS) ARE ALLOCATED IN MARCH 1988**
- **EBASCO SERVICES IS CONTRACTED BY EPA TO CONDUCT RI/FS (1st OPERABLE UNIT) IN MARCH 1988**
- **EPA CONDUCTS REMOVAL ACTION IN OCTOBER 1988 TO STABILIZE WASTES**
- **SECOND RI/FS (2nd OPERABLE UNIT) IS OPEN IN APRIL 1989 TO ADDRESS THE DISPOSAL OF WASTES CONTAIN IN HOLDING UNITS (DRUMS, BASINS, ETC)**

Site History (Cont'n 3 of 3)

- **IMPLEMENTATION OF REMEDY FOR 2nd OPERABLE UNIT STARTS IN SEPTEMBER 1989**
- **RI/FS FOR 1st OPERABLE UNIT IS FINALIZED AND REPORTS ARE RELEASED FOR PUBLIC COMMENT IN AUGUST 1990**

REMEDIAL INVESTIGATION

Summary of Field Investigation

- . SOIL-GAS SURVEY**
- . GEOPHYSICAL INVESTIGATION**
- . AIR MONITORING**
- . SURFACE SOIL SAMPLING**
- . SUBSURFACE SOIL SAMPLING**
- . MONITORING WELL INSTALLATION**
- . HYDRAULIC CONDUCTIVITY TESTING**
- . WATER LEVEL MEASUREMENTS**
- . GROUNDWATER SAMPLING**
- . BUILDING SAMPLING**
- . UNDERGROUND STORAGE TANK SAMPLING**

Summary of Samples Collected by EPA

- **SOIL GAS SURVEY - 102 samples**
- **SOIL - 325 subsurface samples (25 locations)
32 surface samples**
- **GROUNDWATER - 72 samples**
 - **OFFSITE WELLS - 27 locations**
 - **SITE WELLS - 5 locations**
- **AIR - 10 locations**
- **BUILDING - 57 samples**
- **UNDERGROUND STORAGE TANKS - 23 samples**
- **PRIOR EPA WORK**
 - **BASINS**
 - **CONTAINERS (DRUMS, ETC)**
 - **SUMP**
 - **ABOVE GROUND TANKS**

**Maximum Concentration of Selected
Contaminants Detected in Soil,
Groundwater, Building and Underground
Tank Content**

<u>MATRIX</u>	<u>COMPOUND</u>	<u>CONCEN- TRATION</u>
SOIL (mg/Kg)	bis(2-ethylhexyl) phthalate	270
	tetrachloroethene	26
	lead	98

**Maximum Concentration of Selected
Contaminants Detected in Soil,
Groundwater, Building and Underground
Tank Content**

<u>MATRIX</u>	<u>COMPOUND</u>	<u>CONCEN- TRATION</u>
GROUND WATER (ug/Kg)	1,1,1-trichloroethane	100
	trichloroethene	260
	tetrachloroethene	1,300
	ethylbenzene	160
	bis(2-ethylhexyl) phthalate	50
	chromium	159

Maximum Concentration of Selected Contaminants Detected in Soil, Groundwater, Building and Underground Tank Content

<u>MATRIX</u>	<u>COMPOUND</u>	<u>CONCEN- TRATION</u>
BUILDING (ug/wipe)	bis(2-ethylhexyl) phthalate	70
	cadmium	313
	chromium	1,103
	copper	24,600
	lead	7,974
TANKS (mg/Kg)	2-butanone	92,000
	toluene	2,600
	xylene	3,600
	bis(2-ethylhexyl) phthalate	23,000

RISK ASSESSMENT

Exposure Routes

- **SOIL**

- **INGESTION**
- **DIRECT CONTACT**
- **INHALATION**

- **GROUNDWATER**

- **INGESTION**
- **DIRECT CONTACT**
- **INHALATION OF VOLATILE EMISSIONS**

- **BUILDING**

- **INGESTION OF RESUSPENDED DUST**

- **EXISTING ROUTES VS. POTENTIAL FUTURE ROUTES**

Public Health Evaluation Current Land Use Conditions

<u>EXPOSURE ROUTES</u>	<u>NON CARCINOGENIC RISK</u>	<u>CARCINOGENIC RISK</u>
• SOIL	ACCEPTABLE	ACCEPTABLE
• SITE GROUNDWATER	ACCEPTABLE	ACCEPTABLE
• AIR	ACCEPTABLE	ACCEPTABLE

Public Health Evaluation

Future Off-Site Land Use Conditions

<u>EXPOSURE ROUTES</u>	<u>NON CARCINOGENIC RISK</u>	<u>CARCINOGENIC RISK</u>
• SOIL	ACCEPTABLE	ACCEPTABLE
• GROUNDWATER	UNACCEPTABLE	ACCEPTABLE
• AIR	ACCEPTABLE	ACCEPTABLE

Public Health Evaluation

Future On-Site Land Use Conditions

<u>EXPOSURE ROUTES</u>	<u>NON CARCINOGENIC RISK</u>	<u>CARCINOGENIC RISK</u>
• SOIL	ACCEPTABLE	ACCEPTABLE
• GROUNDWATER	UNACCEPTABLE	ACCEPTABLE
• AIR	ACCEPTABLE	ACCEPTABLE
• BUILDING	UNACCEPTABLE	UNACCEPTABLE

FEASIBILITY STUDY

Remedial Alternatives

CONTAMINATED SOILS

- o SC-1 No Further Action
- o SC-3 Excavation/Off-site Incineration/Backfill with Clean Soil
- o SC-4 Excavation/Low Temperature Enhanced Volatilization/On-Site Redeposition
- o SC-5 In-Situ Vacuum Extraction

Remedial Alternatives

CONTAMINATED GROUNDWATER

- o GW-1 No Further Action**
- o GW-2 Pumping/Air Stripping/Reinjection;
Southern Site Boundary (0.2 mgd)**
- o GW-3A Pumping/Air Stripping/Reinjection;
Leading Edge of Plume (1.9 mgd)**
- o GW-3B Pumping/Air Stripping/Reinjection;
Southern Site Boundary and Downgradient (1.0
mgd)**
- o GW-5A Pumping/UV-Chemical
Oxidation/Reinjection; Leading Edge of Plume
(1.9 mgd)**
- o GW-5B Pumping/UV-Chemical
Oxidation/Reinjection; Southern Site Boundary
and Downgradient (1.0 mgd)**

Remedial Alternatives

BUILDING

- o **BD-1 No Further Action**
- o **BD-2 Building Decontamination/Waste Treatment and Disposal**

UNDERGROUND STORAGE TANKS

- o **T-1 No Further Action**
- o **T-2 Removal and Off-Site Disposal**

Detailed Analysis of Alternatives

- 1. OVERALL PROTECTION OF HUMAN
HEALTH AND THE ENVIRONMENT**
- 2. COMPLIANCE WITH ARARs**
- 3. LONG-TERM EFFECTIVENESS AND
PERMANENCE**
- 4. REDUCTION IN TOXICITY, MOBILITY, OR
VOLUME**
- 5. SHORT-TERM EFFECTIVENESS**
- 6. IMPLEMENTABILITY**
- 7. COST**
- 8. STATE ACCEPTANCE**
- 9. COMMUNITY ACCEPTANCE**

**TREATMENT TECHNOLOGIES AND RESOURCE
RECOVERY**

Summary of Alternative Analysis.

SOIL

<u>REMEDY</u>	<u>CAPITAL COST</u>	<u>PRESENT WORTH COST</u>	<u>TIME TO ACHIEVE REMEDY (years)</u>
SC-1	0	564,300	30
SC-3	18,535,100	18,535,100	3.5
SC-4	2,262,500	2,262,500	3.5
SC-5	385,600	385,600	5

Summary of Alternative Analysis.

GROUNDWATER

<u>REMEDY</u>	<u>CAPITAL COST</u>	<u>PRESENT WORTH COST</u>	<u>TIME TO ACHIEVE REMEDY (years)</u>
GW-1	0	464,400	100
GW-2	214,800	3,350,500	103
GW-3A	4,044,700	28,978,100	65
GW-3B	4,936,000	15,620,400	19
GW-5A	4,088,900	21,121,100	65
GW-5B	4,069,800	13,902,300	19

Summary of Alternative Analysis

BUILDING

<u>REMEDY</u>	<u>CAPITAL COST</u>	<u>PRESENT WORTH COST</u>	<u>TIME TO ACHIEVE REMEDY</u> (years)
BD-1	8,800	41,100	30
BD-2	186,200	186,200	3.3

Summary of Alternative Analysis.

UNDERGROUND TANKS

<u>REMEDY</u>	<u>CAPITAL COST</u>	<u>PRESENT WORTH COST</u>	<u>TIME TO ACHIEVE REMEDY (years)</u>
T-1	0	64,300	30
T-2	336,300	336,300	3.1

EPA's Preferred Alternative

- . SC-4 Excavation/Low
Temperature Enhanced
Volatilization/On-Site
Redeposition**
- . GW-3B Pumping/Air
Stripping/Reinjection;
Southern Site Boundary
and Downgradient (1.0
mgd)**
- . BD-2 Building
Decontamination/Waste
Treatment and Disposal**
- . T-2 Removal and Off-Site
Disposal**

PREFERRED REMEDY

<u>REMEDY</u>	<u>CAPITAL COST</u>	<u>PRESENT WORTH COST</u>	<u>TIME TO ACHIEVE REMEDY (years)</u>
♦SC-4	2.3	2.3	3.5
♦GW-3B	4.9	15.6	19
♦BD-2	0.2	0.2	3.3
♦T-2	0.3	0.3	3.1
<u>TOTAL</u>	7.7	18.3	

Costs are expressed in million dollars

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